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THE TREMENDOUS TOLL THAT RUBBER HAS PAID.

IN the first chapter of "The Rubber Crisis in Brazil," which appeared in our April issue, the opinions—given during long and familiar interviews—of several prominent Brazilians were quoted. These men, who speak of Amazon rubber matters with the authority of intimate personal knowledge extending over many years, deny that Brazil's present unhappy condition is due to any failure on the part of its citizens to foresee the coming crisis, for it has been freely prophesied and openly discussed for several years. The fault has not been one of blindness but of the failure to adopt any adequate remedy. They attribute their present troubles partly to the tremendous disadvantages in the lack of capital and labor against which this region has always struggled, partly to the indiscretions of officials who have spent their appropriations for spectacular rather than for substantial results, and partly to the great burden of federal taxation, which one of the men quoted in the letter places, for the last thirty years, at $350,000,000.

This vast amount of money which it is stated northern Brazil has contributed to southern Brazil during the past three decades if put into rubber plantations, on the basis of Eastern estimates—viz., that an acre of rubber trees can be brought into bearing for $150—would have given Brazil plantations aggregating two and a third million acres, or nearly twice the acreage of the East. But to contemplate where Brazil would stand today if $350,000,000 had gone into rubber plantations instead of into government coffers is, of course, pure speculation, interesting but not practically profitable.

GEORGE P. WHITMORE—AN APPRECIATION.

THE leaders of men, the rich, the successful, never lack biographers and eulogists, and this is as it should be. One lives occasionally, however, not a leader, not wealthy, and in whom the ability to create great enterprises is absent, who is yet possessed of such qualities of mind and heart that appreciation is spontaneous, and all who knew him are eulogists. Such a man was George Whitmore. From the beginning of his business career his vocation was to serve rather than to be served. For years the burden of endless and intricate detail rested upon his broad shoulders. With infinite care, without hurry, he conscientiously and thoroughly discharged every duty, mastered each detail. His friendliness, unaffected interest and honesty of purpose were never questioned. In business, home and social life he was ever thoughtful, painstaking, steadfast. Without impatience he finished the half-done tasks of others, corrected their mistakes, remembered when they forgot. He tempered the rashness of the strong by calm counsel, and strengthened the weak with no hurt to their sensitive self-respect. An everyday, matter-of-fact soul, he was a very genius of kindness, courtesy, charity—a humanitarian in every fibre of his being. His one dream of wealth, known to but a few, vanished and left no trace of bitterness, no shade of repining. The warm hand clasp, the slow smile, the gratification over the success of others, were just as hearty and genuine as ever. He was a leader in the honest discharge of duty, rich in friends, and successful in that he possessed a manliness, truth and integrity that few of the world's great attain to.

THE GREAT INCREASE IN FOREIGN COTTON.

RUBBER and cotton are such constant companions—each finding the other so essential for its own efficiency in a great many lines of manufacture—that any pronounced development in the cotton world must

perforce be of interest to the rubber manufacturer.

In The India Rubber World of last November attention was called to the great proportionate increase in the production of foreign cotton over American cotton, and it was pointed out that the cotton production of India—which in 1910 amounted to 1,400,000 bales—would for the present season probably reach 6,000,000 bales. Recent information brings to light such a pronounced increase in cotton growing in another eastern quarter that it now seems necessary to concede that the position which America has held for a hundred years, of producing the larger part of the cotton supply of the world, can no longer be maintained, as the combined production from foreign fields will undoubtedly this year surpass that of our Southern States.

For a number of years past the entire cotton production of the world has been placed in the neighborhood of 22,000,000 bales, of which the United States produced two-thirds. During all these years several foreign governments—particularly England, France and Germany—have made supreme efforts to inaugurate cotton growing on a large and profitable scale in their various colonies. England especially has spent a vast sum of money in this endeavor, and has met with a certain measure of success—in Egypt and in Southern India. But outside of these two localities these government operations have not resulted in a satisfactory way, and the Southern States have felt secure in their supremacy. But it appears now that in a distant quarter of the globe which has been considered almost negligible and as in no way threatening American cotton domination there has recently taken place such an impetus in cotton planting as to bring the entire foreign cotton production to an aggregate figure higher than that accredited to our own country, where this year's production is estimated at a little under 15,000,000 bales.

This new cotton menace comes from China. The Chinese have raised cotton for many centuries, but only for local consumption, the cotton being spun by hand close to the field where it was grown. But during the last few years a number of factories have been erected in the vicinity of Shanghai, and an additional great impulse to cotton growing has been given by the government inhibition against the opium trade, which makes it necessary that the fields previously devoted to the poppy plant should be turned to some other use; and in most instances cotton has taken the place of the poppy. The result is that the Chinese cotton output for the present year will considerably exceed 5,000,000 bales. China has already begun to export cotton, some of it going to Japan, which hitherto has been a considerable purchaser of American cotton goods, but which now is equipped to do much of its own manufacturing.

It is obvious that our Southern States can no longer maintain their serene confidence in their own supremacy. They cannot compete with the cheap labor of India and China, and if they are to hold their own in this vast industry, which for a number of years has added to the wealth of the South a billion dollars a year, they must find some way of using more machinery and less hand labor. It is a well-known fact that there has been very little development in the methods of growing, picking and handling cotton since the time when Andrew Jackson made such an effective entrenchment of it at New Orleans—a hundred years ago. Hitherto there has been no compelling necessity for improving these methods, but with the great and rapidly growing competition from the East this necessity has now arrived and undoubtedly will prove effective in introducing many economies in American cotton production. With greater competition and the exercise of economy which it may necessitate, the price of cotton should gradually drop; and with the greatly decreased price of rubber the manufacturer of tires and other articles combining these two materials can confidently look forward to permanently lower costs.

THE LONDON RUBBER SHOW IN JUNE.

IT is the pleasant and commendable custom of many men in the American rubber trade to tie up, early in June, the cares and perplexities of manufacture and distribution for summer storage and to betake themselves across the water to get in touch for a month or two with the more ancient civilization of the Continent. It is timely, therefore, to remind all such of the Rubber Show which will open in London, in the Royal Agricultural Hall, on the 24th of June, and continue until the 9th of July.

This is the fourth International Rubber Exposition. The first was held in London in 1908. It was necessarily somewhat experimental, but it proved so successful that it was followed three years later by another exposition, held in the same city, but much larger in its scope. The third International Exposition it is not

necessary to describe in detail to American readers, as it was held in the Grand Central Palace in New York in the fall of 1912, and was attended and enjoyed by practically the entire American rubber trade. All three of these functions were under the management of Mr. Manders of London, who is also the organizing manager of the show to be held next month, and who brings to this enterprise the supremely valuable assets of large experience and wide acquaintance. The exhibition next month will enjoy great social prestige from the fact that it will be opened by H. R. H. Prince Arthur, and from the further fact that an address will be made by the Honorable Lewis Harcourt, Secretary of State for the Colonies.

There is one rubber question much more pressing now than on the occasion of any of the earlier rubber exhibitions, viz., the necessity for the discovery of new uses for rubber; and many prizes are offered to inventive geniuses who shall come forward at the exhibition with such discoveries. This is a matter of interest quite as much to American manufacturers as it is to eastern planters. Another feature most important to the American manufacturer will be the comprehensive exhibit of plantation rubbers to be seen at the show, for the plantation product is bound to enter into American manufacture more and more.

It is not likely that any American rubber man intending to go abroad this summer has omitted the London show from his itinerary, but if he has he had better mend his itinerary forthwith so that he will find himself in London at least some of the days between June 24 and July 9.

TURNING PHILANTHROPY INTO PROFITS.

PHILANTHROPY is commendable and profits are desirable; and where the two can be combined the situation is doubly satisfactory. "The National Clean-up and Paint-up Committee," with headquarters at St. Louis, composed principally of men who are interested either in the manufacture or distribution of paints and paint materials, have inaugurated a widespread clean-up and paint-up campaign in which some 2,000 towns—with more to come—are already enthusiastically interested and eager to prosecute the work; and very soon the result of the cleansing and beautifying effect of this movement will be apparent from the Atlantic to the Pacific. Anybody who can get any community to get rid of its rubbish and paint its houses and barns and fences is a benefactor. That cannot be questioned. And, of course, a painting campaign means the consumption of paint, and where several thousand communities are involved, a very large consumption of paint. So while this movement is highly beneficial to all who live in the communities it reaches, it is particularly beneficial to those who make and deal in paint and the materials from which it is made. In other words, this is a case of philanthropy with substantial incidental profits. Every maker and wholesaler in the paint trade can well afford to take part in it. It is a very satisfying kind of co-operation.

Nor is this kind of philanthropic-profit-producing co-operation confined to the paint industry. It is adapted to many lines. For instance—Why shouldn't all the rubber footwear people get together a little later and plan a fall campaign for national dry feet—getting a few doctors to help, just to give the movement proper professional tone? The humble golosh is not only a commercial product, but it is unquestionably a conserver of health—a true life preserver. And if all the manufacturers of rubber boots and shoes were to band together for this work, they would not only have the satisfaction of knowing that they were accomplishing more for the national health than seven shiploads of assorted serums could do, but at the same time they would sell twice as many rubbers.

THE silent rubber heel and the squeakless rubber sole have achieved a distinct triumph; they have secured official recognition and endorsement by the most august legislative assemblage on earth—which of course is the United States Senate. The continuous thunder of heated debate, and particularly this conundrum of the Panama tolls repeal, seem rather to have got on the senatorial nerves, as one member—and singularly enough a western member—recently complained to the sergeant-at-arms that the pounding of the pages, as they ran up and down the aisles, was too much for his sensibilities, and that this unnecessary noise must be stopped. Thereupon the sergeant-at-arms called the pages together and issued an edict that they must all equip themselves henceforth with rubber heels and soles. This they have done. And now the Senate chamber is the abode of silence that it should be; and one more conspicuous and convincing proof has been given to the world of the superiority of the soft and silent heel and sole of rubber as contrasted with the din and clatter of heels and soles of leather.

IN accordance with its usual custom, THE INDIA RUBBER WORLD reproduces in this issue the annual statistics of imports and exports of crude and manufactured rubber of all kinds for the fiscal year ended June 30 last. By the courtesy of the Department of Commerce, these figures are presented in advance of their official publication. While the volume of unmanufactured rubber is 7 per cent. more than in the previous fiscal year, the value is 4 per cent. less. Exports of domestic rubber manufactures show an increase of about 10 per cent., from 13 to 14½ millions of dollars. The accurate classification makes it possible to show the results very clearly.

WHAT THE RUBBER CHEMISTS ARE DOING.

[Extracts from recent articles on the Chemistry of Rubber which have appeared in some of the foreign publications.]

IN the issue of "Le Caoutchouc et la Guttapercha" of the 15th of January, 1914, A. Dubosc contributes an article on the use of formic acid for the reclaiming of rubber. He points out the drawbacks inherent in the sulphuric acid process, such drawbacks consisting chiefly in the injurious action of the acid on the rubber and the difficulty of completely washing out the last traces of acid. While it is a fact that the mineral acids have, under certain conditions, a pronounced action on rubber, the organic acids, especially acetic and formic, have an action much less pronounced. By the action of acetic acid on cotton fabric, cellulose acetate is formed, which latter may be separated from the rubber by means of acetone. It is more expedient, however, to continue the action of the acid on the fabric till the acetate or formate of cellobiose is formed.

It is preferable to use formic acid rather than acetic acid, for the reason that the formic acid acts without the application of heat. It is necessary to use twice the weight of 90 per cent. formic acid on the weight of the scrap rubber. The formic acid before being used must be saturated with hydrochloric acid gas. In 12 hours the fabric is converted into water soluble cellobiose formate. The mass is filtered and the rubber washed and dried. By working at temperatures between 60 degs. and 70 degs. C. it is possible to bring about the conversion of the fabric in about 4 hours.

In the "India Rubber Journal," Vol. 47, No. 9, H. P. Stevens publishes an investigation on "The Influence of Various Nitrogenous and Resinous Substances on the Vulcanizing Properties of Rubber." The author determines the effect which the removal of the protein matter has on the vulcanization of rubber, the effect of the removal of the resins, and the effect of the combined removal of the protein and resins. He also carries out experiments with a view to determining the influence which added amounts of these substances have on the vulcanization of rubber.

It is found that the removal of the protein matter greatly retards the coefficient of vulcanization, and produces a product which exhibits very slight resistance to stretching. Adding Casein or Riedel's Peptone to rubber, from which the protein matter has been removed, while aiding the combination of the sulphur and rubber, does not materially aid in improving the physical tests of the compound. The addition of starch to protein-free rubber was found to be of no avail. When litharge is used in the vulcanization of a rubber, from which the protein matter has been removed, there results a product which exhibits the normal coefficient of vulcanization, and gives highly satisfactory physical tests.

The removal of the resins does not effect the co-efficient of vulcanization, and aids slightly in the resistance to stretching of the vulcanized product. Reincorporating the extracted resins, and subsequently vulcanizing, gives normal values. Instead of incorporating the extracted resins, the same weight of Pontianak resin may be used without affecting the results obtained. If, however, colophony is used, there results a decrease in the resistance to stretching.

Rubber freed from resins and protein matter, on vulcanizing behaves similarly to rubber from which only the protein matter has been removed.

In the "Colloid Zeitschrift," Vol. 14, page 35, F. Kirchhof contributes an article on the "Addition Products of Rubber." The author observed that vulcanized rubber behaves differently from unvulcanized rubber when allowed to oxidize either in the air or in oxygen. In the case of the vulcanized product, it would seem as if there were only one double bond for every $C_{10}H_{16}$ complex. Furthermore, unvulcanized rubber behaves similarly to vulcanized rubber when acted upon by certain substances in the gaseous state, such as, for instance, bromine or sulphur chloride. After the saturation of one double bond no further addition of bromine or sulphur chloride results. It would therefore appear as if sulphur in the process of vulcanization acted on rubber in a similar manner as do bromine and sulphur chloride at ordinary temperatures.

In view of the above observations, Kirchhof carried out a series of experiments in which he determined the increase in weight in a film of rubber when exposed to oxygen, bromine and sulphur chloride for definite periods of time. In addition to determining the increase in weight when rubber was allowed to react with the above named substances in the gaseous condition, the author also determined changes in viscosity as resulting from the addition of small quantities of sulphur chloride, and also from the addition of oxygen.

As the result of these experiments the author concludes that the reactions which result in the formation of addition products proceed, in the case of rubber in the solid state, as though there were only one double bond for every $C_{10}H_{16}$ complex. This might be explained on the supposition that the two double bonds in the octadiene ring, supposed to exist in rubber, had unequal affinities, or the saturation of one of these double bonds results in the weakening of the affinity of the other. There is no experimental evidence, however, in favor of either of these views. It is more reasonable to explain this phenomenon from the standpoint of Partial Valences, the more so, since the latter are supposed to condition the colloidal state, in that they unite the individual simple complexes to form the highly complicated colloid. As the result of the formation of the addition product, the Partial Valences are converted into saturated bonds, with the simultaneous addition of the bromine or sulphur chloride.

The addition of very small quantities of bromine or sulphur chloride results, in the first place, in a marked decrease in viscosity, though an increase in the viscosity soon results, gelatinization finally taking place. The period of time necessary before gelatinization results is dependent on the original viscosity of the rubber solution, the solvent, and the concentration of the sulphur chloride. In a naphtha solution the period of time is shorter than in a benzol solution. This decrease in the viscosity is to be regarded as a depolymerization of the rubber. After such depolymerization the rubber becomes more reactive for the formation of addition products. It behaves as if it had two double bonds for every $C_{10}H_{16}$ complex. It will thus be seen that rubber in solution behaves differently from rubber in the solid state regarding the formation of addition products. In cases where the rubber is reacted upon in the solid state, equilibrium results, and this equilibrium tends to act in the direction of repolymerization.

There are many factors which contribute to the actual equilibrium obtained, such as the original degree of polymerization, the strength of the depolymerizing agent, temperature, etc. Accordingly products are formed which do not exhibit simple and stoichiometrical relationships. Reactions of this nature have often been referred to as being examples of "absorption." The author believes that these observations are applicable to the explanation of the vulcanization of rubber. It has previously been pointed out that in the vulcanization process a slight depolymerization, owing to the action of heat, takes place. Kirchhof believes that rubber thus slightly depolymerized becomes more reactive, and is thus more susceptible to the catalytic condensing action of the sulphur, which latter reaction is regarded as the real cause of the vulcanization.

The results of government encouragement are shown in the increased area of 2,595 acres now under cotton in Bisanuloke, the principal growing center of the Monthol province of Siam. This result is partially attributed to free distribution of seed and the erection of a motor ginning plant. Receipts by rail at Bangkok have increased since 1909 from 120,000 to 2,000,000 pounds.

The Rubber Crisis In Brazil—II.

By the Editor of The India Rubber World.

THE MOJU RUBBER PLANTATION, PARA.

FEW Americans are better known on the Amazon than Commodore E. C. Benedict. Forty years ago he visited Pará, and at eighty he still takes midwinter cruises up this great river. These visits are not alone for relaxation; he almost always fathers some new and large enterprise. For example, he installed wireless telegraph stations at Pará, Santarem and Manaos. The first installation did not work,

BOAT LANDING, MOJU PLANTATION.

whereat he pulled it out and put in another. This was so successful that the Brazilian Government was more than willing to purchase it. Among other enterprises, Commodore Benedict and his associates—among whom is the Hon. Wm. M. Ivins—are owners of a big tract of land near Pará, a part of which has been turned into a rubber plantation.

To go back a little: The State of Pará offered premiums for planting, which were in the form of special exemptions and cash bonuses. A great number of private planters registered at the Department of Agriculture, and it was said that in December, 1911, there were 340,000 trees planted. While the registrants were largely individuals, the planting

HOME OF THE SUPERINTENDENT, MOJU PLANTATION.

was done by companies. The largest of these was the Moju Plantation Co.

The location is some 70 miles from the city of Pará, on the Moju river. This is a broad, deep waterway, navigable for steamers of considerable draught. During his last visit to South America Commodore Benedict took the "Oneida" with its passengers and certain leading business men in Pará right up to the plantation. The Moju Plantation Co.'s lands are

SAW MILL, MOJU PLANTATION.

cut in two by the river, giving them several miles of waterfront. This company owns several hundred thousand acres, most of it still heavily forested, the important clearings being in the immediate vicinity of the little settlement, consisting of the superintendent's and laborers' homes, etc., etc. When the work was begun, some four years ago, it was in charge of a Pará merchant, who took hold with much enthusiasm. He did a big business as an aviador, ran a store for the laborers and had much forest cut and burned. He also put in some 500 acres of rice, 10,000 bananas, several thousand cacao trees and 40,000 *Hevea* trees. In the belief that a bet-

FIELD CLEARED FOR PLANTING, MOJU PLANTATION.

ter tree grew in the Acre district, he sent there to get the seed, instead of depending upon trees in the vicinity.

Some 150 laborers, mostly West Indian negroes, were employed on the plantation. Whether or not the government paid the company bonuses for the plantings of rice and rubber does not transpire. According to the scale of premiums that the state promised, the company should have received about $6,000 for rice and $10,000 for rubber planting.

For some time Andre Goeldi worked there to produce a cover crop that should enable the company to do away with the constant cleaning of the rubber. His successful work

with the bunch grass (See INDIA RUBBER WORLD, April, 1914, P. 347) has very probably solved the problem.

A saw mill was also erected upon the property. This plant includes not only engine, boilers, pumps and tanks, but a planer, sticker, band saw and a machine and blacksmith shop.

The rubber planting is on both sides of the river, the trees

HOME OF A RUBBER GATHERER, MOJU RIVER.

being set about 15 x 20 feet apart. The close cleaning followed in the East is not employed. Instead the rows of trees stand in cleared pathways with windrows of jungle between. The trees are very healthy and growing finely. They range in age from two to four years. The land is of course very level. It is a sandy loam, with an occasional outcropping of clay.

At the present time little or no work is going on. The Pará aviador has retired from active participation in the affairs of the company. The laborers, many of whom fell ill, have been laid off, and, like everything in the Amazon valley,

HEADQUARTERS PARA (MARAJO) ISLANDS RUBBER ESTATES, LIMITED.

the work waits until the rubber situation is cleared up a bit. A few men remain at the plantation as caretakers, their immediate superintendent being Mr. Gordon Pickerell, an enterprising young American, son of the United States Consul at Pará.

THE PARA (MARAJÓ) ISLANDS RUBBER ESTATES, LIMITED.

A plantation that is today making a little money is the Para (Marajó) Islands Rubber Estates, Limited. It is located some 200 miles from the city of Pará, on the Anajaz river. About four years ago the company, with English capital back of it, planted some 50,000 *Hevea* trees. They also sent out men and gathered wild rubber. Their manager, being ambitious for the company, became an aviador on a considerable scale, and finally became overextended and embarrassed. The home company then sent out T. W. Hall, an expert accountant, who pronounced the concern solvent. He appointed Sidney Hall & Co., of Pará, fiscal agents, and they in time put everything into good shape. Today they are making some money from the wild rubber on their estate, and as soon as their planted trees come into bearing they expect their revenues to increase appreciably.

Incidentally it should be noted that foreign companies usually have Brazilian managers. The reason is that under a Brazilian a company pays in taxes about $160 a year, but if the manager be a foreigner the tax is $1,500 a year.

THE RUBBER PLANTERS' TRUST.

Some of the otherwise well informed in Pará and Manaos are of the opinion that rubber prices will go back to their former high level. They argue that in the past the price has advanced and receded periodically and that it has never remained either high or low. They are confident that the

HAULING *Batelao* OR RUBBER BOAT AROUND A CATARACT IN THE MADEIRA RIVER.

present situation is the result of manipulation. They see in planters' associations a "Rubber Planters' Trust" which is determined to put plantation rubber into every factory in the world, so they put prices down low enough to make purchases attractive, and were successful.

THE EXPORT TAX ON RUBBER.

The price of rubber in Pará is somewhat different from its price in Liverpool or New York. It is, in fact, all of 35 per cent. less. That percentage, however, must be added before it is shipped, and is made up of the usual State and Federal export taxes, to which is added about 15 per cent. for port and freight charges.

By the way, it has been generally understood that the government planned to take off its export tax, reducing it some 10 per cent. each year until it finally was wiped out. The fact is, 10 per cent. was to be taken off of the weekly Pauta or valuation of the rubber (not from the tax), which would be so small as to be hardly appreciable.

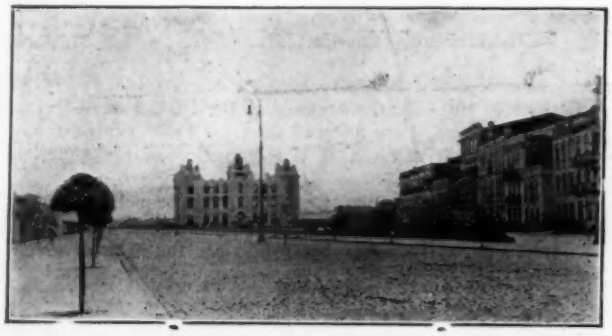
That the government has not reduced the export taxes on rubber does not surprise anyone. It could not be done, for the rubber tax is practically the only source of revenue. Of all the millions that have been received in years past none

have been laid aside for a sinking fund, and the treasury is always empty. To anyone who likes to think in big figures it is interesting to estimate how much rubber money has been taken in taxes by Brazil during the last 25 years. Figuring Pará rubber at $1 a pound and caucho at 60 cents, and averaging taxes at 20 per cent., the sum would reach $350,000,000; which is a very conservative estimate.

THE "PORT OF PARA" AND THE MADEIRA-MAMORÉ RAILWAY.

The city of Pará, commanding the entrance to the great Amazon valley—an area of over 270,265 square miles—is ideally situated. Because of this, when the opening of the Amazon to the navigation of the world brought it into direct communication with Europe, as well as with the United States, its population grew from 30,000 to 200,000. Much of this increase was due in part also to the great growth of the rubber business.

This rapid development of the city made it patent that the facilities for coping with the increasing traffic of the port were inadequate. Believing that the rubber business would continue to expand, a syndicate of capitalists under the name of The Port of Para Co. took up the work of Port development.



PORT OF PARA OFFICE BUILDING ON THE BOULEVARD DA REPUBLICA, PARA.

This company's concession from the Federal Government of Brazil gives it the monopoly of the Port services, construction and operation of quays, warehouses and other works at Pará within a zone of 18 miles towards the ocean and 12 miles in the other direction for a period of 65 years, to be extended 90 years after the completion of the second section of the works.

The Port works, now nearly finished, are of the most modern character, are equipped with the best appliances for loading and unloading vessels, for warehousing and distributing merchandise, and are equal in every respect to the most up-to-date ports of Europe, such as Liverpool, Antwerp and Hamburg. Vessels of the largest draught can pass from the old deep water anchorage by a new channel to the quay wall at any state of the tide.

Up to the present time the following works have been completed: 4,133 feet of quay wall for ocean going steamers, with a depth of water alongside of 30 feet at low water of ordinary spring tides; 722 feet of quay wall for river steamers, with a depth of water alongside of 12 feet; 1,500 feet of quay wall for river steamers, with a depth of water alongside of 9 feet 9 inches; 13 warehouses, giving a floor space of 31,084 square yards; 2 double-story warehouses, 394 x 66 feet, with four 1½-ton electric elevators, as well as other electric appliances for the handling of the merchandise; 9 3-ton electric cranes and 5 5-ton electric cranes; several small steam cranes; electric light and power station; facilities for coaling and watering steamers; marine repairing shops; 2 storage oil tanks at Hyutanahan—capacity of each, 1,500 tons; 3 large crude petroleum storage tanks at Miramar, the largest in South America—capacity of each, 7,800 tons of oil; 3 oil tank lighters of 1,000 tons capacity; a large depot for materials of an inflammable nature.

On and adjacent to the Val-de-Caes property—a property secured by the Port company about three miles north of the

PORTO VELHO, MADEIRA-MAMORE RAILWAY.

city of Pará—a complete ship-repairing depot, consisting of two floating docks and three slipways, with repairing shops, has been installed. The floating docks, which are operated electrically, are designed for river vessels, each with a capacity of 1,700 tons dead weight. The slipways, also operated electrically, are capable of taking vessels up to 800 tons dead weight, at any state of the tide.

The repair shops comprise several buildings, including machine shops, smiths' shops, foundry, platers' shop, pattern makers' shop, joiners' shop, office and stores. The whole is equipped with the most modern and effective machinery, and

THE LAST OF THE CITY SUBURBS, PARA.

operated by electricity transmitted over the company's own line from the company's power station at the city of Pará.

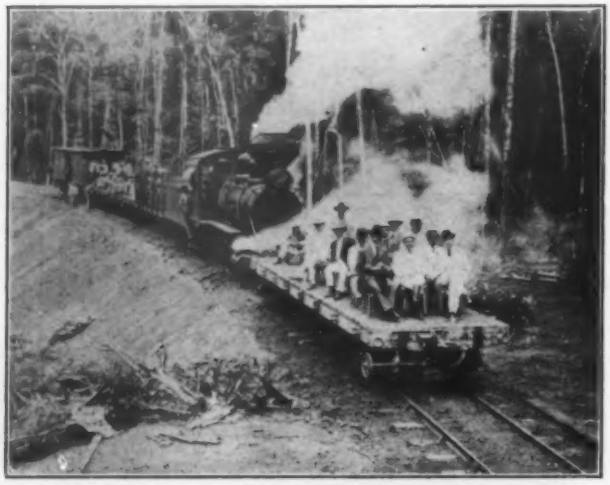
The first section of the Port Works was formally inaugurated on October 12, 1909, since which date steamers have been coming alongside the quay wall, and business is being carried on to the entire satisfaction of the Customs authorities, shipping agents and others interested.

The importance of the construction of the Madeira-Mamoré Railway was early realized by the Port company, which purchased about one-half interest in that undertaking. The Madeira-Mamoré Railway from Porto Velho on the Madeira river around the series of cataracts which seriously obstruct navigation to Guajará Mirim on the Mamoré river, 340 kilometres (211 miles) in length, is already open for traffic. This railway, by bringing the river navigation of the Amazon and its tributaries into connection with the navigable rivers of Bolivia, is opening an enormous extent of rich and fertile territory, as well as the mineral wealth of the Eastern slope of the Andes.

In addition to these great enterprises, the Companhia Navegação do Amazonas was formed, and a fleet of twelve 1,000-ton twin-screw boats built, which connect the city of Pará with the rivers Madeira, Purus and Juruá, where navigation is possible at all times of the year.

From these points a fleet of 14 light-draught stern-wheelers carry merchandise and passengers to the smaller tributaries of the upper reaches of the Amazon. The company had in sight a large amount of traffic for the port and planned to materially lower rates of transportation, thereby largely developing the trade with the upper regions of the Amazon valley.

That such enterprises, installed in the face of incredible difficulty and at the cost of millions of dollars and the loss of many lives, should have even a temporary setback is a



CONSTRUCTION TRAIN, MADEIRA-MAMORE RAILWAY.

calamity. But the works, practically completed and ready to serve Northern Brazil and the world, are only partially in use. The great warehouses are nearly empty, many steamers loading in mid-stream to save port charges. The fine new steamers are anchored off Val-de-Caes, and very little is being done anywhere. The ship yard is doing some work on the company's boats, and the dry dock holds a Peruvian vessel, but everywhere is economy and contraction when there should be bustle and expansion. So, too, on the Madeira-Mamoré Railway. One train a week has been running, so it was recently said, and the working force has been cut down as far as consistent with safety. Indeed, it was said that native labor had become so clamorous for employment at any price that the *batelaos* had been repaired and filled with rubber to run the cataracts as in the olden time, tho the railroad was built for the express purpose of avoiding this slow and dangerous system of transportation.

THE RECORD OF THE "PROTECTION OF RUBBER."

The amazing story of the Defesa da Borracha (Protection of Rubber) is the most unfortunate of the happenings of the Amazonian rubber crisis. Conceding that it was an honest attempt to conserve the rubber industry of Brazil, its cost in dollars to a people now in dire financial distress and its failure to accomplish what it promised are appalling.

It began with an appropriation of 8,000 contos ($2,400,000) and the establishment of a commission, with the Minister of Agriculture as its head, to spend the money. The center of active work was at Rio de Janeiro. There the central bureau was established, with the following pay roll:

	Monthly Salaries.
Superintendent	$1,600.00
Chief engineer, Rio Branco	900.00
Physician	800.00
Constructing engineer	500.00
Chief engineer of Partial Commission	400.00
Chief engineer of District of Inspection	400.00
Engineer of First Class, Rio Branco Section	400.00
Agricultural engineer	300.00
Engineer of the Second Class	300.00
Secretary to the superintendent	300.00
Paymaster, Rio Branco Section	300.00
Draughtsman, bookkeeper, clerk, typewriter, messenger, servant and other employes	1,500.00
Total monthly salaries	$7,700.00
Total yearly salaries	$92,400.00

Certain of the officials, because of the high cost of living in their localities, were allowed from 50 to 80 per cent. increase over their salaries, at the discretion of the superintendent.

Under the central bureau were numerous branches and experiment stations, each with its list of salaried men. For example, that at Pará had the following, the salaries given being annual:

Director	$4,000.00
Chief of Technical Section	3,000.00
Assistant, Technical Section	2,000.00
Chief of Culture	1,400.00
Horticulturist Gardener	1,000.00
Head Mechanic	1,600.00
Almoxarife (storekeeper)	2,000.00
Librarian	1,600.00
Clerk	1,200.00
Porter	800.00
Total	$18,600.00
The other experiment stations were:	
Amazonas	18,600.00
Matto Grosso	18,600.00
Bahia	18,600.00
Piauhy	18,600.00
Minas Geraes	18,600.00
	$111,600.00

The total annual salaries for the six stations, it will be seen from the table above, amounted to $111,600.

Then followed a series of contracts, namely:

For Dr. Carlos de Cerqueira Pinto's secret processes and patents for coagulating rubber latex, $180,000 in 1913 and $180,000 in 1914. In addition a royalty of .0014 per pound on rubber coagulated by his process until he should receive $400,000. (This contract with Dr. Pinto was described in considerable detail in THE INDIA RUBBER WORLD for November, 1913. A great many of the rubber men of this country had an opportunity to familiarize themselves with its results at the time of the New York Rubber Show, as Dr. Pinto had an exhibit at that exhibition and displayed many samples of rubber coagulated by this process—which avoids all forms of fumigation and employs a certain ingredient, "lactina," prepared by a formula which Dr. Pinto discovered and patented.)

With Dr. Oswaldo G. Cruz, for plan to make the valley of the Amazon sanitary, $210,000 and traveling expenses.

With Engineer M. Mallard, plans for betterment of navigation of Amazon, $60,000.

With the Port of Pará Co., two expeditions up the Amazon, $650,000.

With J. P. Wileman, publishing Bulletin, $15,000.

For washing plant at Manaos, $120,000.

For washing plant at Minas Geraes, $30,000.

With Goodyear Tire & Rubber Co. of South America, $150,000.

With Labroy for Pará experiment station, $14,400.

Thus, in salaries and contracts there was a grand total of $1,768,400.

Then there were the rubber exhibitions at Rio Janeiro and at Pará, together with conferences, committees, etc., etc.

Beyond this there were the premiums calling for additions to the foregoing. They were:

Premiums amounting to $450,000 for nine plants for washing rubber at Pará, Manaos, Bahia and other points.

Premiums amounting to $450,000 for five factories for the manufacture of rubber goods.

For establishing a fishery industry, $3,000 a year for five years.

For creating pasture lands, $9,000 for each 2,500 acres.

For rice, corn or beans planted, $30,000 for each 2,500 acres.

For beef products, tinned, $30,000 for each 500 tons.

The rubber premiums for new planting were:

$800 for each 30 acres of *Hevea.*
$480 for each 30 acres of *Manihot.*
$480 for each 30 acres of *Castilloa Ulei.*
$300 for each 30 acres of *Hancornia.*

For replanting wild rubber the premiums for each 62.5 acres were:

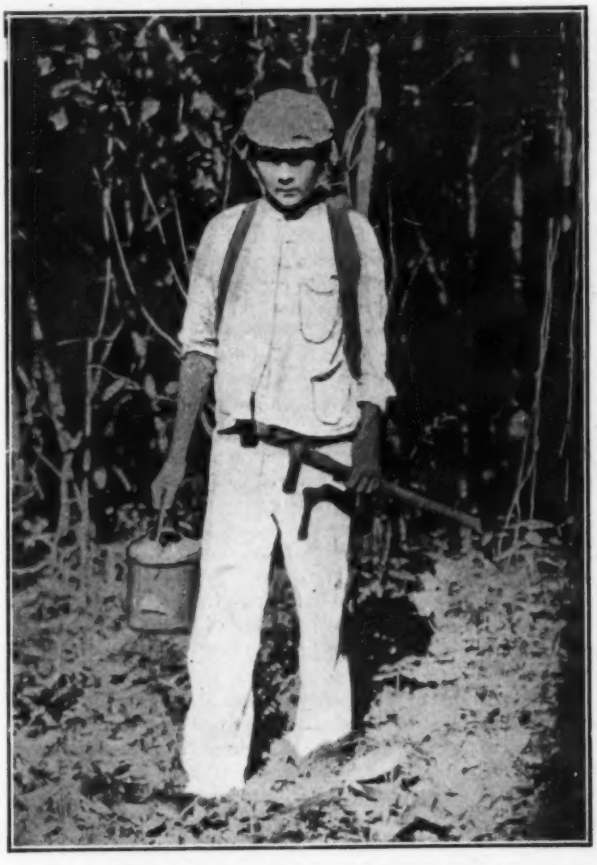
$600 for *Hevea.*
$300 for *Manihot.*
$300 for *Castilloa Ulei.*
$250 for *Hancornia.*

There was also monetary provision for hospitals in the interior, equipped with modern laboratories and instruments, and for hotels for emigrants at Pará, Manaos and other points, etc., etc.

It will thus be seen that $2,500,000 would only go a short way in carrying out these far-reaching plans. The Minister of Agriculture saw this, and in his budget called for 5,000 contos ($1,500,000) for 1913 and 10,000 contos ($3,000,000) for 1914. This minister, Dr. Pedro de Toledo, has gone out of office, and whether his successor, Dr. E. de Queiroz, will ask for more or less is a question. The gossip on the Amazon, however, is that no more money will be forthcoming.

THE *SERINGUEIRO* THE LAST HOPE.

The failure of the great rubber factories and the continued low prices for rubber are bringing to the front the *Seringueiros,* particularly those that live on the lower reaches of the Amazon. When supplies are cut off at the fountain head in Pará they will not starve. On the contrary, they can get an excellent living from the land. They are planting corn, cassava and beans, catching fish, and are just as content as when they purchased their supplies at exorbitant prices. They will continue to gather rubber, the whole family assisting, and if they receive only ten cents a pound will consider it all profit. When this thrifty, mosquito-proof individual awakens to the fact that it is profitable to plant a few *Hevea* trees, and to turn in only clean rubber, that is what he will do. Until that time he will gather and market



ONE WHO WILL ALWAYS GATHER RUBBER.

a certain amount each year, and the price will not trouble him in the least.

PARA AND MANAOS RUBBER STATISTICS FOR 1913.

According to the figures of Zarges, Berringer & Co., Para, the 1913 exports from Para and Manaos represented a total of about 40,000 tons, while the Para stock on December 31 was about 1,000 tons, thus bringing the year's production up to about 41,000 tons. Of the 40,000 tons exported, Europe took about 22,000 tons, and the United States about 18,000 tons. Comparison with the figures of recent years shows the exports to have been approximately: 1903, 31,000 tons; 1904, 31,000 tons; 1905, 34,000 tons; 1906, 35,000 tons; 1907, 36,000 tons; 1908, 38,000 tons; 1909, 40,000 tons; 1910, 38,000 tons; 1911, 36,000 tons; 1912, 43,000 tons; 1913, 40,000 tons.

Exports of rubber from the State of Sao Paulo for 1912 and 1913 were valued at $54,479 and $29,627, respectively.

BRITISH INDIAN COTTON PLANTING.

According to an Indian official report, the cotton crop of 1913-14 was in general successful, with the exception of some portions of the presidency of Bombay and of the Central and United Provinces, which have more or less suffered from drought.

The total area under cotton is stated to be 23,900,000 acres, as compared with 20,900,000 in the previous season, the increase being about 14 per cent. By the latest reports the total production showed a gain of about 15 per cent., from 4,300,000 bales in 1912 to 4,928,000 in 1913.

RUBBER GATHERING IN THE PERUVIAN MONTANA.

AMONG the results obtained by the various expeditions which have explored the Ucayali, Azupizu, Urubamba, Manu, Maranon and Juambari rivers, has been the finding of large tracts which had not yet been trodden by rubber gatherers. Reliable explorers like von Hassel, Stieglich and others maintain that there are in those regions at least 200 different latex-bearing varieties of trees.

Only natives can be taken into consideration as workers, the tropical climate proving destructive to the health and activity of Europeans. The rubber gatherers are mostly half-breeds, for the Indians of these zones only occupy themselves occasionally with rubber. As penetrating the primeval forest is no slight task, the rubber tappers usually choose the sections which are easily reached by boat. This is why the extensive rubber locations are mostly found in the vicinity of rivers. What lies further towards the interior is to a great extent disregarded.

The system under which rubber is gathered in Bolivia is similar to that in force along the Amazon. The man who gets a concession has to equip the gatherers in advance, and this involves often a very considerable outlay. While the gatherers are at their work they are entirely removed from any control. When they return at the end of the season they are credited with the rubber which they bring back, against which are charged all the advances made at the beginning of the season. Gatherers are sometimes engaged at a fixed rate of payment, but this is only possible where the conditions under which they are to work are fairly well known.

In the months of July, August and September the tappers start to look for new locations, the rubber trees being at that time most easily distinguishable by their color. The trees found are marked by the forest-knife, such marks being generally respected by other gatherers. Each tapper marks an *estrada* of 80 to 150 trees. He then hews a path from one tree to another through the thick underwood, to make a way for the future operations; then erecting near the river his primitive hut, he waits till October when the tapping season commences, to last till the beginning of December. The rainy weather stops tapping during January, February and March, while work can be resumed in April, May and June. These periods, however, vary according to the different zones. The Peruvian Montana is exploited most wastefully and without system of any sort. With efficient administration and proper operation, the yield of that region might be increased ten fold.

In the northern part of Peru, matters are different. There large English companies have tried to work the rubber forests in a rational way, but in the absence of experienced laborers they were thrown back on the entirely uncivilized Indians. The latter can only be trained to regular work with considerable difficulty, and had to be treated practically as slaves. This system was what gave rise to the Putumayo scandal of 1912.

Rubber lands can be acquired in four ways: 1, by purchase; 2, by condemnation; 3, by grant; 4, by concession. In each case special regulations are applicable.

COLONEL CHAVES AND THE ACRE RUBBER TAX.

A GRAPHIC presentment of the difference between the exporting of rubber from Brazil and Bolivia is shown in the following table. This was prepared by Colonel Avelino de M. Chaves, who is the owner of a large *seringal* on the Purus river in the Federal district of Acre. Colonel Chaves

COLONEL AVELINO DE M. CHAVES.

found that the municipality of Senna Madureira, department of Acre, had put an extra 1 per cent. tax on Acre rubber, in addition to the 20 per cent. regular tax; whereupon he presented these figures, stirred up other shippers as well as the commercial associations at Pará and Manaos, and the 1 per cent. tax was repealed.

ACCOUNT SALES OF RUBBER FROM ACRE AND BOLIVIA.

Sold in Manaos.

2,200 lbs. from Acre.				2,200 lbs. from Bolivia.			
Fine	1,622 lbs. @ .74	$1,200.00		Fine	1,622 lbs. @ .74	$1,200.00	
Entre Fine	330 lbs. @ .64	211.00		Entre Fine	330 lbs. @ .64	211.00	
Sernamby	154 lbs. @ .52	81.00		Sernamby	154 lbs. @ .52	81.00	
Loss	94 lbs.			Loss	94 lbs.		
	2,200 lbs.	$1,492.00			2,200 lbs.	$1,492.00	
Charges 22 per cent		328.00		Charges 22 per cent		328.00	
			$1,820.00				$1,820.00
Expenses.				Expenses.			
Taxes 20 per cent		$298.35		Taxes 8 per cent		$119.35	
Freight		129.60		Freight		129.60	
Expenses in Manaos		64.80		Expenses in Manaos		64.80	
Stamps, etc.		37.25	$530.00	Stamps, etc.		37.25	$351.00
Net receipts			$1,290.00	Net receipts			$1,469.00

Dr. Huber's Last Four Articles on *Hevea*.

WHEN, in January last (page 170), THE INDIA RUBBER WORLD published a review of the recently issued "Boletim," Vol. VII., of The Goeldi Museum, Pará, the work accomplished by that institution was regarded with the prospect of its being for a long time to come under the skilled direction which had brought it to its present condition. By the death of Dr. Jacques Huber, on February 18, The "Boletim" (or "Bulletin") derives a fresh interest from the fact that it contains a group of four articles by Dr. Huber on his favorite subject of *Hevea*, which thus acquire retrospective value. A brief summary of these articles is here reproduced as a contribution to rubber literature, and as a memorial of the deceased scientist.

In his opening words, the author explains that although seemingly disconnected, these four articles are all inspired by the desire to elucidate the intricacies which attend the affinities between the varieties of this genus, as well as its geographical distribution. It is hoped in this way to attain a more reliable basis for the commercial nomenclature of the product, and the methodical selection of the types most appropriate for systematic cultivation.

SCOPE OF THE FOUR ARTICLES.

The articles are divided as follows:

I. Systematic and Geographical Distribution of the genus *Hevea*.

II. Some species of *Hevea* from the river Iça-Putumayo.

III. Distribution of *Hevea* in State of Pará.

IV. Variable characteristics of genus *Hevea* and possibilities of a methodical selection.

SYSTEMATIC AND GEOGRAPHICAL DISTRIBUTION OF HEVEA.

The botanical nomenclature of the separate varieties of *Hevea* had formed the subject of controversy between Dr. Huber and Professor Pax, of Breslau, the first-named scientist having made a classification of the botanical section *Bisophonia* into three series, with fourteen sub-divisions, while the latter defined seven series with eighteen varieties. The individual classifications being in many cases alike, the difference was in their allocation into sub-divisions, *Hevea Brasiliensis* constituting a prominent feature in each case, and being referred to as differing only slightly from *Randiana*.

Dr. Huber's proposed division is as follows: *Luteae* Series—*Hevea lutea, apiculata, caneata, Benthamiana, Duckei, paludosa* (*rigidifolia*). *Intermediae* Series—*Hevea minor, microphylla, Randiana, Brasiliensis. Obtusiflorae* Series—*Hevea Spruceana, similis, pauciflora, confusa.*

Besides these fourteen sub-divisions, Dr. Huber introduces three as being of uncertain allocation: *nitida, viridis* and *Kunthiana*, entering into a detailed discussion of the various differences pointed out by Professor Pax. He further expresses his concurrence with the view of the last-named scientist, that although the samples examined of *Hevea* fruits and seeds show various generic differences, only a few species are known. If a large parcel of seeds is secured from any point in the *Hevea* zone, some clearly-defined types may be recognized which might be regarded as minor varieties.

Proceeding to the discussion of the geographical distribution of the varieties of *Hevea*, Dr. Huber refers to the division made by Ule into two territories bounded by the equator: a northern one, traversed by "black rivers," and a larger southern one, whose rivers are of white water. Both districts have their own varieties of *Hevea*, though in locations near the boundary species of a transition character are to be found.

According to Professor Pax, the northern half would contain eleven varieties and the southern seven, while, according to Dr. Huber, the relative distribution would be eight and eleven. Dr. Huber remarks that as a fact the Amazon territory cannot be divided by the equator, the Amazon valley or any other imaginary line, into two natural regions, and that we would obtain a wrong idea of the distribution of *Hevea* if we accepted such a division. According to the present stage of exploration, the varieties apparently belonging to the Rio Negro territory are: *Hevea lutea, apiculata, Benthamiana, rigidifolia, minor* and *microphylla*. To the territory west of the Rio Negro belong: *Hevea Duckei* and *paludosa*; to the eastern part of the continent up to the coast of Guiana: *Hevea Guayanensis;* while to the most northerly part of the area belong *Hevea membranacea* and *pauciflora*. To the central Amazonian lowlands belong—with a particular extension to the south: *Hevea Brasilensis;* with northerly and southerly radiations: *Hevea Spruceana;* with a limited area along or near the course of the Amazon: *Hevea Similis, discolor, nitida* and *viridis*. To the continent south of Amazonas belong: *Hevea cuneata, nigra* and *collina*, while a variety resembling *Guayanensis* is found on the continent to the east of Belem (Pará).

II. SOME SPECIES OF THE *HEVEA* FROM THE RIVER ICA-PUTUMAYO.

In dealing with this subject, Dr. Huber explains that the river Iça (called by the Peruvians the Putumayo), is one of the northern affluents of the Solimoes. As will be recalled, this river has many *seringaes* along its course, the rubber coming from there being known as "Putumayo" rubber. It is inferior in quality to that received from the southern affluents of the above-named river.

Reporting on three samples of Putumayo rubber, which he received early in 1911 from W. Fox, former superintendent of the Penang Botanical Garden, who had lately visited Peru, Dr. Huber gives a complete botanical description of:

Hevea Foxii, said to grow to the height of 70 feet, found in the woods near Ultimo Retiro and called by the natives "Ituri"; *Hevea glabrescens*, found in Eastern Peru, on the river Putumayo, near Liberia and Sombra; *Hevea viridis*, already described by him on previous occasions, found to the west of the Putumayo river.

Dr. Huber considers the first two of the above (which have been designated as "new species—Huber") as being intimately related to the group of *Hevea lutea*. He quotes the remarks of Mr. Fox to the effect that 75 per cent. of the rubber exported from the Putumayo region is produced from *Hevea Foxii*, this variety of tree being the only one as a rule incised, all the other rubber trees being felled in order to extract their latex.

The third sample received by Dr. Huber from Mr. Fox, *Hevea viridis*, had been already described by the former in 1902, in the "Bulletin de la Société Botanique de France," Volume XLIX., page 48, and in the "Boletim" of the Pará Museum, Volume III., page 16 and 17. Dr. Huber expresses the opinion that the third plant collected by Mr. Fox corresponds exactly with the *Hevea viridis*, described as above. It is found on both sides of the Amazon.

III. DISTRIBUTION OF HEVEA IN THE STATE OF PARA.

Applying the general principles already propounded, to the State of Pará, Dr. Huber distinguishes four typical series of *Hevea:*

1. *Seringueira verdadeira* (*Hevea Brasiliensis*), of the series *Intermediae*. 2. *Seringueira torrada* (*Hevea Benthamiana*), of the seris *Luteae*. 3. *Seringueiras vermelhas* (*Hevea Guayanensis* and *collina* of section *Euhevea*. 4. *Seringueira barriguda* (*Hevea Spruceana*) of the series *Obtusiflorae*.

The headquarters of *Hevea Brasiliensis* in the State of Pará are the alluvial lands of the estuary of the rivers Pará and Amazon, whereas this species is almost completely wanting in the plains of Marajó, Mexiana and Caviana. In all this region it would seem that the rubber tree never grows far from the direct influence of the sea. The same remark applies to the river Tocantins and to the northern affluents of the mouth of the Amazon, where the *Hevea Brasiliensis* is limited to the lower part of these rivers, not being found above the first waterfalls.

Last year Dr. Huber received some incomplete specimens of rubber plants from the river Jary, an accurate study of which revealed the existence of *Guayanensis* above the first waterfall, of a character related to the *Spruceana* found below that point.

Another large sub-division of the distribution of *Hevea Brasiliensis* in the State of Pará is the fluvial basin of the river Xingú. Among noted explorers who had visited this section were: Karl von den Steinen, who, after descending the river Matto Grosso, met with the first rubber trees a little below the Martius waterfall; and Henry Coudreau, who discovered rubber trees as far as the southern limit of the State.

The third grand division of the area of *Hevea Brasiliensis* in the State of Pará—that of the basin of the Tapajoz—while presenting certain features of analogy with the second, differs from it to some extent by its relative isolation.

Thus far as to the distribution of *Hevea Brasiliensis* in the three principal zones in the State of Pará.

The three other varieties of *Hevea—torrada, vermelha* and *Spruceana*—are then dealt with from a botanical point of view in connection with the details quoted at the beginning of the section.

IV. VARIABLE CHARACTERISTICS OF GENUS *HEVEA* AND POSSIBILITIES OF A METHODICAL SELECTION.

In this final chapter on *Hevea*, Dr. Huber urges the importance of not confining investigations to *Hevea Brasiliensis*, but of extending them to other varieties of the genus. Among the points touched upon are: 1. Fluctuating variations or fluctuations, generally more or less dependent upon external conditions. 2. Sudden and hereditary variations or mutations.

The above conclusions, Dr. Huber adds, may seem to possess a more or less theoretical character, in the absence of positive information as to the influence of various fluctuations on the yield of latex. Methodical cultivation and exact statistical records are, however, points demanding careful attention. Above all, it is necessary to avoid the crossing of different varieties, so as to obtain a pure and unmixed character of vegetation.

A letter from Trinidad of the EDITOR of THE INDIA RUBBER WORLD, which appeared in the July, 1912, issue of that journal, is quoted on this subject, as proving that this crossing does in some cases take place.

Hevea Brasiliensis, the best-known species of this genus, has been up to now considered as a well-characterized unit in a Linnean sense. *Hevea Randiana*, by its vegetative and reproductive qualities, approximates so closely to *Hevea Brasiliensis* as to entitle it to be considered a particularly well-pronounced sub-species. Various instances are recorded in support of this view.

Other points dealt with are the systematic study of fluctuating variability, by individual observation of the size of the leaves; the quality and quantity of latex; the correlation of variability in seeds with variations in the lactiferous system; the characteristic form and size of *Hevea Brasiliensis* seeds, etc.

Much of the text of these articles is of a detailed nature of interest to specialists, but the matter of general import is sufficient to merit attention. The four articles have been reprinted by the litho-typographic firm Ernesto Lohse & Ca., Pará.

Should be on every rubber man's desk—The Rubber Trade Directory of the World, 1912.

REPORT OF THE BRAZILIAN MIXED COMMISSION.

WHILE the question has formed the subject of Brazilian legislation, a Mixed Commission of Federal Senators and Deputies has likewise been investigating the causes of the present Amazon crisis. The report of this commission, as presented by its spokesman, Dr. Eloy de Souza, and reproduced by the "Revista" of the Commercial Association of Amazonas, refers to various points of importance.

In the first place, Dr. de Souza urges that the present trouble is one of an organic character, affecting national production, which has cost numerous lives and much money during the thirty-five years in which efforts have been made to counteract it, the public authorities having been tardy in the solution of so important a problem. Administration incapacity has, moreover, been blamed for permitting the competition of a similar product of foreign origin on such conditions that it will be difficult to establish a just equilibrium between the cost of producing Brazilian rubber and that at which competing qualities are offered in the markets of consumption.

Special reference is made to the two reports of Dr. Oswaldo Cruz, principal medical authority on existing sanitary conditions; one with regard to the construction of the Madeira-Mamoré railway, and the other of a general character. In the former it is stated that the climate seems to have reduced by 60 per cent. the normal working capacity of laborers from other regions. The examples of the governments of Ceylon and Malaya are quoted in the latter as deserving of imitation by the Brazilian authorities in the enactment of sanitary legislation.

The respective production per acre in Brazil and the East is compared, attention being called to the saving of time in the latter case by reason of the fact that the trees are close together instead of being widely scattered. It is estimated that the laborer can in a given time tap twice as many trees on the one continent as on the other.

Another subject treated in detail is the example afforded by the United States in the improvement of river navigation by the removal of snags. This question has considerable interest for Amazonia, as the river system of the former greatly resembles that of the latter. At the Philadelphia International Congress of Navigation, in 1912, this similarity of conditions was commented upon by Dr. Manoel Bandeira, the delegate from Brazil. The proposed new railways are likewise discussed in this report of the Mixed Commission.

WORLD RUBBER STATISTICS FROM AMSTERDAM.

According to an estimate of the "Indische Mercuur," of Amsterdam, the world's rubber production of recent years has been:

	Plantation.	Brazilian.	Various.	Total.
1905 .....*tons*	145	34,000	26,800	60,945
1906	510	36,000	29,500	66,010
1907	1,000	38,000	30,000	69,000
1908	1,800	30,000	24,290	65,000
1909	3,600	42,000	23,400	60,000
1910	8,200	40,500	21,300	70,000
1911	14,500	38,000	23,500	76,000
1912	27,500	42,500	30,000	100,000
1913 (estimated).....	45,000	42,500	30,000	115,000

For 1912 the world's consumption was estimated at about 102,000, or slightly more than the production of 100,000 tons. Its approximate distribution was as follows: United States, 47,000 tons; Great Britain, 15,000 tons; Germany, 15,000 tons; France, 10,000 tons; other countries, 15,000 tons.

The accepted authority on South American rubber—"The Rubber Country of the Amazon," by Henry C. Pearson.

Official India Rubber Statistics for the United States.

Fiscal Year Ended June 30, 1913.

INDIA RUBBER.

IMPORTS OF CRUDE INDIA RUBBER BY COUNTRIES.

FROM—	POUNDS.	VALUE.
Europe:		
Belgium	5,917,440	$5,412,395
France	2,968,232	2,584,677
Germany	7,790,742	5,942,371
Netherlands	405,807	382,680
Portugal	873,249	642,304
United Kingdom—England	34,164,908	33,586,808
Total	52,120,378	$48,551,235
North America:		
British Honduras	15,592	$11,818
Canada	192,241	193,262
Costa Rica	99,781	62,881
Guatemala	133,230	91,190
Honduras	90,069	59,867
Nicaragua	543,250	373,732
Panama	95,097	60,986
Salvador	12,753	7,433
Mexico	2,033,791	1,329,021
British West Indies	50	47
Cuba	741	416
Total	3,216,595	$2,190,653
South America:		
Brazil	43,518,861	$25,905,641
Colombia	635,530	434,662
Ecuador	890,217	568,187
British Guiana	15	10
Peru	352,347	303,292
Venezuela	388,941	324,457
Total	45,785,911	$27,536,249
Asia:		
China	78	$60
British India	92,304	100,464
Dutch India	80,840	65,480
Straits Settlements	5,638,854	5,162,872
Other British East Indies	6,443,502	6,559,737
Total	12,255,578	$11,888,613
Oceania:		
Philippine Islands	637	$305
Total	637	$305
Africa:		
British South Africa	5,250	$3,246
Portuguese Africa	10	15
Total	5,260	$3,261
Total, 1912-13	113,384,359	$90,170,316
Total, 1911-12	110,210,173	93,013,255
Total, 1910-11	72,046,260	76,244,603
Total, 1909-10	101,044,681	101,078,825
Total, 1908-09	88,359,895	61,709,723
Total, 1907-08	62,233,160	36,613,185
Total, 1906-07	76,963,838	58,919,981
Total, 1905-06	57,844,345	45,114,450

IMPORTS OF MANUFACTURES OF INDIA RUBBER BY COUNTRIES.

[+ indicates increase; — indicates decrease, compared with the preceding year.]

FROM—	VALUE.
Europe:	
Austria-Hungary	$36,565+
Belgium	80,314—
Denmark	5—
France	202,214+
Germany	531,971+
Italy	2,951+
Netherlands	2,599+
Norway	103+
Russia in Europe	35,270—
Sweden	53—
Switzerland	1,423+
United Kingdom	317,356+
Total	$1,210,824
North America:	
Bermuda	$5+
Canada	4,417+
Mexico	21—
Total	$4,443
South America:	
Argentina	$7+
Brazil	48+
Total	$55
Asia:	
British India	$3+
China	52—
Japan	1,851+
Turkey in Asia	5+
Total	$1,911
Oceania:	
British Australia and Tasmania	$3—
Total	$3
Total, 1912-13	$1,217,236
Total, 1911-12	874,736
Total, 1910-11	875,125
Total, 1909-10	1,154,347
Total, 1908-09	1,391,770
Total, 1907-08	1,956,590
Total, 1906-07	2,262,783
Total, 1905-06	1,992,413

RE-EXPORTS OF IMPORTED INDIA RUBBER.

By countries (for year ending June 30, 1913).

	POUNDS.	VALUE.
Austria-Hungary	2,404	$2,398
Belgium	61,892	42,249
France	102,631	82,238
Germany	315,083	211,382
Netherlands	16,945	12,202
Portugal	11,526	6,900
United Kingdom—		
England	224,495	176,202
Scotland	2,695	2,237
Canada	4,488,198	3,892,130
Japan	44,049	45,541
British Oceania—Australia and Tasmania	2,469	2,900
Total, 1912-13	5,272,387	$4,476,379
Total, 1911-12	5,610,951	4,890,905
Total, 1910-11	5,267,588	5,439,282
Total, 1909-10	6,492,947	7,629,380
Total, 1908-09	3,791,971	2,964,496
Total, 1907-08	4,110,667	2,994,208
Total, 1906-07	4,215,350	3,593,912

RE-EXPORTS OF MANUFACTURES OF INDIA RUBBER.

	VALUE.
Germany	$2,925
Russia in Europe	1,026
United Kingdom—England	1,159
Bermuda	3
Canada	1,812
Central American States—Honduras	167
Newfoundland and Labrador	15
West Indies—Cuba	104
Chile	762
Total, 1912-13	$7,973
Total, 1911-12	6,681
Total, 1910-11	29,356
Total, 1909-10	13,568
Total, 1908-09	36,401
Total, 1907-08	176,129
Total, 1906-07	32,712

GUTTA PERCHA.

IMPORTS OF CRUDE GUTTA PERCHA BY COUNTRIES.

FROM—	POUNDS.	VALUE.
Europe:		
France	4,342	$2,836
Germany	138,598	93,703
Netherlands	1,080	190
Portugal	33,518	18,747
United Kingdom	10,475	8,700
Total	188,013	$124,176
North America:		
Panama	4,633	$463
Total	4,633	$463
Asia:		
Straits Settlements	288,207	$42,674
Total	288,207	$42,674
Total, 1912-13	480,853	$167,313
Total, 1911-12	1,204,406	225,797
Total, 1910-11	1,648,921	390,548
Total, 1909-10	784,501	167,873
Total, 1908-09	255,559	82,136
Total, 1907-08	188,610	100,305
Total, 1906-07	546,890	201,339
Total, 1905-06	500,770	188,161
Total, 1904-05	665,217	210,188

IMPORTS OF MANUFACTURES OF GUTTA PERCHA BY COUNTRIES.

FROM—	VALUE.
Europe:	
Belgium	$209
France	973
Germany	26,347
Switzerland	1
United Kingdom	49,736
Total	$77,266
North America:	
Canada	$32
Mexico	2
Total	$34
Total, 1912-13	$77,300
Total, 1911-12	41,098
Total, 1910-11	61,283
Total, 1909-10	80,567
Total, 1908-09	71,819
Total, 1907-08	93,545

RE-EXPORTS OF GUTTA PERCHA.

	POUNDS.	VALUE.
United Kingdom—		
England	22,097	$2,200
Scotland	240	452
Canada	15	13
Total, 1912-13	22,352	$2,665
Total, 1911-12	1,011	945
Total, 1910-11	62,391	19,235
Total, 1909-10	74,137	13,886
Total, 1908-09	9,370	3,730
Total, 1907-08	.....	.....
Total, 1906-07	5,000	700

RE-EXPORTS OF MANUFACTURES OF GUTTA PERCHA.

	VALUE.
Canada	$25,862
Mexico	2,044
Total, 1912-13	$27,906
Total, 1911-12	65
Total, 1910-11	8,687
Total, 1909-10	13,955
Total, 1908-09	31,308
Total, 1907-08	944
Total, 1906-07	5,005

GUTTA JELUTONG.

IMPORTS OF GUTTA JELUTONG (PONTIANAK).

FROM—	POUNDS.	VALUE.
Europe:		
Germany	37,082	$1,642
Netherlands	1,533,986	77,962
Total	1,571,068	$79,604

Asia:		
British India	371,837	$15,698
Straits Settlements	42,978,159	2,058,658
Dutch East Indies	423,785	20,401
Total	43,773,781	$2,094,757
Africa:		
British West Africa	489	$80
Total	489	$80
Total, 1912-13	45,345,338	$2,174,441
Total, 1911-12	48,795,268	2,255,050
Total, 1910-11	51,420,872	2,872,633
Total, 1909-10	52,392,444	2,419,223
Total, 1908-09	24,826,296	852,372
Total, 1907-08	22,803,303	1,039,776
Total, 1906-07	28,437,660	1,085,098
Total, 1905-06	21,390,116	733,074
Total, 1904-05	19,104,911	641,319

RE-EXPORTS OF GUTTA JELUTONG (PONTIANAK)

	Pounds.	Value.
Germany	3,000	$163
Total, 1912-13	3,000	$163
Total, 1911-12	118,486	6,079
Total, 1910-11	.....	.....
Total, 1909-10	2,139	112

BALATA.

IMPORTS OF BALATA.

From—	Pounds.	Value.
Europe:		
England	83,870	$52,861
Total	83,870	$52,861
North America:		
Canada	1,601	$1,314
Panama	66,783	27,910
Barbados	1,288	876
Trinidad and Tobago	51,776	26,725
Total	121,448	$56,825
South America:		
British Guiana	115,655	$77,381
Dutch Guiana	392,377	287,299
French Guiana	17,296	12,651
Venezuela	587,952	279,755
Total	1,113,280	$657,086
Total, 1912-13	1,318,598	$766,772
Total, 1911-12	1,517,066	984,012
Total, 1910-11	878,305	624,702
Total, 1909-10	399,003	196,878
Total, 1908-09	1,157,018	522,872
Total, 1907-08	584,582	276,756
Total, 1906-07	799,029	305,041
Total, 1905-06	374,220	152,689

RE-EXPORTS OF BALATA.

	Pounds.	Value.
Germany	23,053	$12,354
Netherlands	22,385	16,581
United Kingdom—		
England	38,220	20,595
Scotland	27,853	23,286
Canada	6,823	5,147
Total, 1912-13	118,334	$77,963
Total, 1911-12	62,529	38,423
Total, 1910-11	264,589	230,575
Total, 1909-10	.....	42,750
Total, 1908-09	.....	223,907
Total, 1907-08	.....	18,741
Total, 1906-07	.....	12,659

GUAYULE.

IMPORTS OF GUAYULE GUM.

From—	Pounds.	Value.
Europe:		
Germany	24,690	$15,605
Total	24,690	$15,605
North America:		
Mexico	10,193,501	$4,329,483
Total	10,193,501	$4,329,483
Total, 1912-13	10,218,191	$4,345,088
Total, 1911-12	14,238,625	6,463,787
Total, 1910-11	19,749,522	10,443,153

RE-EXPORTS OF GUAYULE GUM.

	Pounds.	Value.
Germany	34,777	$24,321
United Kingdom—England	8,991	6,372
Canada	40,001	23,976
Total, 1912-13	83,769	$54,669
Total, 1911-12	197,948	98,517
Total, 1910-11	340,405	175,995

(Not reported until 1910-11.)

IMPORTS OF ELASTICON AND SIMILAR SUBSTITUTES FOR INDIA RUBBER.

From—	Value.
Europe:	
Austria-Hungary	$67
France	50,117
Germany	2,154
United Kingdom	45,107
Total	$97,445
North America:	
Canada	$7
Total	$7
Total, 1912-13	$97,452
Total, 1911-12	87,328
Total, 1910-11	115,601
Total, 1909-10	114,516
Total, 1908-09	60,625
Total, 1907-08	27,000

RE-EXPORTS OF ELASTICON, ETC.

	Value.
Denmark	$559
Total, 1912-13	$559
Total, 1911-12	231

(Not reported before 1911-12.)

SCRAP RUBBER.

QUANTITY AND VALUE OF IMPORTS, BY COUNTRIES.

From—	Pounds.	Value.
Europe:		
Austria-Hungary	8,425	$730
Belgium	944,272	78,172
Denmark	378,160	32,846
Finland	224,000	20,104
France	5,665,552	541,190
Germany	4,025,842	294,969
Italy	55,662	5,002
Netherlands	1,528,395	98,563
Norway	470,587	41,864
Roumania	89,098	6,950
Russia in Europe	7,468,274	619,594
Spain	20,639	2,035
Sweden	1,792,254	166,064
Switzerland	120,830	7,831
Turkey in Europe	724,051	60,282
United Kingdom	11,453,405	1,045,100
Total	34,969,446	$3,021,296
North America:		
Canada	7,210,245	$598,259
Panama	40,494	2,168
Mexico	225,749	19,940
Newfoundland and Labrador	96,514	6,689
British West Indies	26,257	2,331
Cuba	182,782	16,313
Santo Domingo	500	65
Total	7,782,541	$645,765
South America:		
Brazil	2,351	$24
Chile	33,746	2,450
Venezuela	972	80
Total	37,069	$2,554
Asia:		
China	91,456	$4,932
Hongkong	12,902	1,060
Japan	60,230	3,385
Russia in Asia	285,969	21,408
Turkey in Asia	17,875	1,414
Total	468,432	$32,199
Oceania:		
Australia and Tasmania	77,787	$4,379
Philippine Islands	10,850	550
Total	88,637	$4,929
Africa:		
French Africa	39,331	3,498
Total	39,331	$3,498
Total, 1912-13	43,385,456	$3,709,238
Total, 1911-12	26,293,192	2,095,605
Total, 1910-11	26,948,000	2,334,870
Total, 1909-10	37,364,671	2,998,697
Total, 1908-09	20,497,695	1,543,267
Total, 1907-08	16,331,035	1,496,822
Total, 1906-07	29,335,193	2,608,987
Total, 1905-06	24,756,486	1,721,678
Total, 1904-05	15,575,214	953,439

QUANTITY AND VALUE OF EXPORTS, BY COUNTRIES.

To—	Pounds.	Value.
Austria-Hungary	92,708	$17,236
Belgium	424,479	61,790
Denmark	23,320	2,332
France	1,136,191	161,070
Germany	959,509	146,476
Italy	29,382	2,546
Netherlands	363,834	49,204
Sweden	52,729	7,045
United Kingdom	2,810,882	274,996
Canada	1,341,637	154,134
Japan	34,794	3,613
Total, 1912-13	7,269,465	$880,442
Total, 1911-12	7,336,984	780,188
Total, 1910-11	7,049,729	723,664
Total, 1909-10	6,143,610	578,944
Total, 1908-09	4,071,795	402,897
Total, 1907-08	4,255,789	449,727
Total, 1906-07	4,756,621	548,695
Total, 1905-06	*a*	339,507
Total, 1904-05	*a*	204,945

(*a*) Not officially reported.

RE-EXPORTS OF SCRAP RUBBER.

To—	Pounds.	Value.
United Kingdom—England	3,120	$268
Canada	84,810	10,455
Total, 1912-13	87,930	$10,723
Total, 1911-12	302,105	28,196
Total, 1910-11	401,231	43,338
Total, 1909-10	61,395	5,373
Total, 1908-09	38,506	2,093
Total, 1907-08	21,713	2,943
Total, 1906-07	105,463	9,444

RECLAIMED RUBBER.

QUANTITY AND VALUE OF EXPORTS, BY COUNTRIES.

To—	Pounds.	Value.
Belgium	109,232	$17,400
France	234,604	29,525
Germany	129,530	27,599
Italy	1,000	200
Russia in Europe	3,306	320
Sweden	52,679	10,700
United Kingdom	744,451	127,644
Canada	3,808,611	661,960
Japan	240,512	39,331
Australia and Tasmania	89,322	18,225
Total, 1912-13	5,413,247	$932,904
Total, 1911-12	5,397,806	875,501
Total, 1910-11	4,994,527	781,650
Total, 1909-10	3,622,556	535,795
Total, 1908-09	3,196,551	414,861
Total, 1907-08	2,947,974	418,738
Total, 1906-07	4,550,788	665,109
Total, 1905-06	4,084,696	511,843
Total, 1904-05	*a*	522,902

(*a*) Not officially reported.

EXPORTS OF AMERICAN RUBBER GOODS, FISCAL YEAR ENDED JUNE 30, 1913.

EXPORTED TO—	Belting, Packing and Hose.	Boots.		Shoes.		Tires		Other Goods.	Total
		Pairs.	Value.	Pairs.	Value.	For Automobiles. Value.	All Other. Value.		
EUROPE:									
Austria-Hungary	$2,370	108	$371	2,371	$1,341	$299	$543	$12,229	$17,153
Azores and Madeira Islands	50	.....	.....	545	471	.....	107	811	1,439
Belgium	6,932	113	328	63,113	37,295	401,900	466	57,969	504,890
Bulgaria	.....	10	49	14,550	8,757	500	.....	16	9,322
Denmark	10,750	959	1,426	52,776	25,617	16,611	14,374	6,560	75,338
Finland	539	.....	.....	48	30	1,545	2,441	1,478	6,033
France	32,116	36	118	54,252	27,436	20,205	2,626	140,077	222,578
Germany	56,673	934	4,561	237,409	132,154	401,196	1,658	376,899	973,141
Gibraltar	.....	.....	.....	.....	.....	.....	16	30	46
Italy	4,934	291	931	63,127	37,933	1,150	3,070	40,908	88,926
Netherlands	6,316	.....	.....	8,473	3,535	424	1,219	42,917	54,411
Norway	8,013	.....	.....	28,735	16,173	456	10,152	4,819	39,613
Portugal	790	38	116	3,324	2,317	282	.....	506	4,011
Roumania	2,487	.....	.....	12,817	8,518	146	.....	.....	11,151
Russia in Europe	14,671	.....	.....	102	50	729	4,831	6,468	26,749
Spain	8,933	1,348	5,206	41,642	22,079	567	4,137	5,889	46,811
Servia	.....	.....	.....	1,769	987	.....	.....	.....	987
Sweden	2,554	.....	.....	758	579	5,301	70,055	5,398	83,887
Switzerland	2,400	104	477	13,861	8,368	.....	268	1,885	13,398
Turkey in Europe	.....	.....	.....	109,790	51,972	.....	114	271	52,357
United Kingdom	249,029	31,081	64,329	757,404	358,510	1,125,718	119,864	1,052,223	2,969,673
Total, Europe	$409,557	35,022	$77,912	1,466,866	$744,122	$1,977,029	$235,941	$1,757,353	$5,201,914
NORTH AMERICA:									
Bermuda	$752	.....	.....	715	$430	-$401	$488	$3,125	$5,196
British Honduras	1,261	.....	.....	116	62	163	81	565	2,132
Canada	472,645	13,009	$44,725	82,624	46,074	1,324,459	17,757	1,159,955	3,065,615
Costa Rica	12,468	2	15	120	75	2,793	2,096	5,247	22,694
Guatemala	8,694	.....	.....	72	40	2,224	672	5,393	17,023
Honduras	4,008	.....	.....	36	28	299	46	2,601	6,982
Nicaragua	3,216	181	454	36	35	429	248	6,900	11,282
Panama	182,671	3,945	12,522	2,455	2,022	19,466	13,822	24,922	255,425
Salvador	13,169	5	16	.....	.....	1,705	.....	12,422	27,312
Mexico	438,885	1,947	8,342	6,431	3,480	203,883	47,683	104,369	806,642
Miquelon, etc.	10	240	612	546	341	.....	.....	.....	963
Newfoundland and Labrador	6,191	5,231	13,296	49,999	31,243	693	1,895	13,639	66,957
West Indies—									
British	9,989	74	405	853	500	52,825	658	13,581	77,958
Cuba	156,069	217	446	1,386	733	12,322	106,114	144,006	419,690
Danish	948	1	4	351	343	540	838	751	3,424
Dutch	154	.....	.....	88	56	767	40	987	2,004
French	.....	.....	.....	.....	.....	115	1,088	284	1,497
Haiti	1,579	24	68	445	202	765	108	3,155	5,877
San Domingo	15,596	5	34	654	555	2,306	3,886	6,130	28,507
Total, North America	$1,328,305	24,881	$80,939	146,927	$86,219	$1,626,155	$197,530	$1,508,032	$4,827,180
SOUTH AMERICA:									
Argentina	$40,011	122	$407	25,210	$15,045	$8,153	$16,039	$76,405	$156,060
Bolivia	649	48	126	312	173	106	.....	318	1,372
Brazil	41,177	1,229	4,236	76,031	43,861	47,537	32,864	81,585	251,260
Chile	57,970	2,001	8,720	20,434	12,677	2,844	31,076	24,812	138,099
Colombia	11,992	.....	.....	976	637	16,211	5,838	5,507	40,185
Ecuador	8,489	.....	.....	148	105	8,459	1,786	2,766	21,605
Guiana—British	1,260	.....	.....	3,575	1,661	2,726	1,911	1,050	8,608
Dutch	184	.....	.....	.....	.....	63	6	164	417
French	.....	.....	.....	.....	.....	.....	.....	28	28
Peru	26,308	552	2,504	498	306	1,273	3,030	8,088	41,509
Uruguay	18,967	.....	.....	42,935	25,523	1,990	8,730	18,992	74,202
Venezuela	9,383	.....	.....	352	208	10,703	160	11,910	32,364
Total, South America	$216,390	3,952	$15,993	170,471	$100,196	$100,065	$101,440	$231,625	$765,709
ASIA:									
China	$11,272	449	$1,063	333	$264	$622	$86	$4,298	$17,605
Japanese China	929	.....	.....	.....	.....	152	.....	108	1,189
Korea	3,071	.....	.....	60	64	240	.....	1,775	5,150
British India	9,272	.....	.....	96	53	882	418	4,457	15,082
Straits Settlements	2,487	.....	.....	.....	.....	1,133	2,078	391	6,089
Other British	.....	.....	.....	.....	.....	337	350	98	785
Dutch East Indies	24	.....	.....	192	126	860	1,516	1,308	3,834
Hongkong	413	50	108	.....	.....	677	617	2,194	4,009
Japan	77,900	13,055	23,790	46,717	27,977	29,975	12,185	86,364	258,191
Asiatic Russia	130	4	34	12	12	.....	.....	18	194
Siam	135	.....	.....	.....	.....	1,334	.....	101	1,570
Turkey in Asia	1,000	.....	.....	12,198	7,183	.....	.....	156	8,339
Total, Asia	$106,633	13,558	$24,995	59,608	$35,679	$36,212	$17,250	$101,268	$322,037
OCEANIA:									
Australia and Tasmania	$186,663	4,647	$12,996	$340,938	$163,150	$58,068	$3,726	$114,787	$539,390
New Zealand	43,108	22,873	47,218	26,618	21,122	26,270	5,722	58,074	201,514
Other British	.....	262	238	1,764	1,412	37	.....	338	2,025
French Oceania	999	10	26	5,030	4,468	956	384	567	7,400
German Oceania	66	.....	.....	.....	.....	.....	.....	54	120
Philippine Islands	79,637	1,149	2,437	5,600	3,429	100,476	37,512	118,005	341,496
Total, Oceania	$310,473	$28,941	$62,915	379,950	$193,581	$185,807	$47,344	$291,825	$1,091,945

EXPORTED TO—	Belting, Packing and Hose.	Boots. Pairs.	Boots. Value.	Shoes. Pairs.	Shoes. Value.	Tires. For Automobiles. Value.	Tires. All Other. Value.	Other Goods. Value.	Total Value.
AFRICA:									
British—West	$1,895	48	$113	.....	.....	$89	.....	$190	$2,287
South	171,998	3,124	11,457	4,023	$2,127	17,057	$5,759	22,190	230,588
East	518	2	6	.....	.....	536	17	.....	1,077
French Africa	1,149	.....	.....	24	13	.....	.....	90	1,252
Liberia	.....	.....	.....	42	22	.....	.....	3	25
Portuguese Africa	58,605	.....	.....	36	21	.....	556	219	59,401
Turkey in Africa—Egypt	28	.....	.....	3,200	1,755	.....	5,501	151	7,435
German Africa	.....	.....	.....	8	6	.....	120	90	216
Spanish Africa	.....	.....	.....	312	212	.....	.....	.....	212
Canary Islands	.....	.....	.....	.....	.....	270	.....	.....	270
Total, Africa	$234,193	3,174	$11,576	7,645	$4,156	$17,952	$11,953	$22,933	$302,763
Grand Total, 1912-13	$2,605,551	109,528	$274,330	2,231,467	$1,163,953	$3,943,220	$611,458	$3,913,036	$12,511,548
			Pairs.	Value.					
Grand Total, 1911-12	$2,315,484	.....	*2,545,076	*$1,502,890	.....	$2,657,809	$546,833	$4,144,273	$11,167,289
Grand Total, 1910-11	2,163,416	.....	*3,984,332	*2,219,430	.....	2,085,107	592,470	3,886,825	10,947,248
Grand Total, 1909-10	1,960,825	.....	*3,791,084	*1,984,739	.....	.....	.....	5,115,331	9,060,895
Grand Total, 1908-09	1,498,445	.....	*2,396,435	*1,292,673	.....	.....	.....	3,823,956	6,615,074
Grand Total, 1907-08	1,347,775	.....	*3,080,253	*1,614,290	.....	.....	.....	3,743,040	6,705,105
Grand Total, 1906-07	1,253,369	.....	*2,310,420	*1,231,898	.....	.....	.....	3,729,643	6,214,910
Grand Total, 1905-06	1,221,159	.....	*2,693,690	*1,505,082	.....	.....	.....	2,966,144	5,692,385
Grand Total, 1904-05	994,100	.....	*2,390,539	*1,214,342	.....	.....	.....	2,572,375	4,780,817
Grand Total, 1903-04	880,010	.....	*2,310,420	*1,231,898	.....	.....	.....	3,729,643	6,214,910
Grand Total, 1902-03	819,985	.....	*2,307,401	*1,056,491	.....	.....	.....	2,299,875	4,176,351
Grand Total, 1901-02	634,146	.....	*2,594,708	*1,046,315	.....	.....	.....	1,781,941	3,462,402
Grand Total, 1900-01	565,726	.....	*1,459,100	*724,015	.....	.....	.....	1,727,527	3,017,268

* These numbers of pairs and values are for boots and shoes combined. Tires were not specifically reported before 1910-11.

SUMMARY.

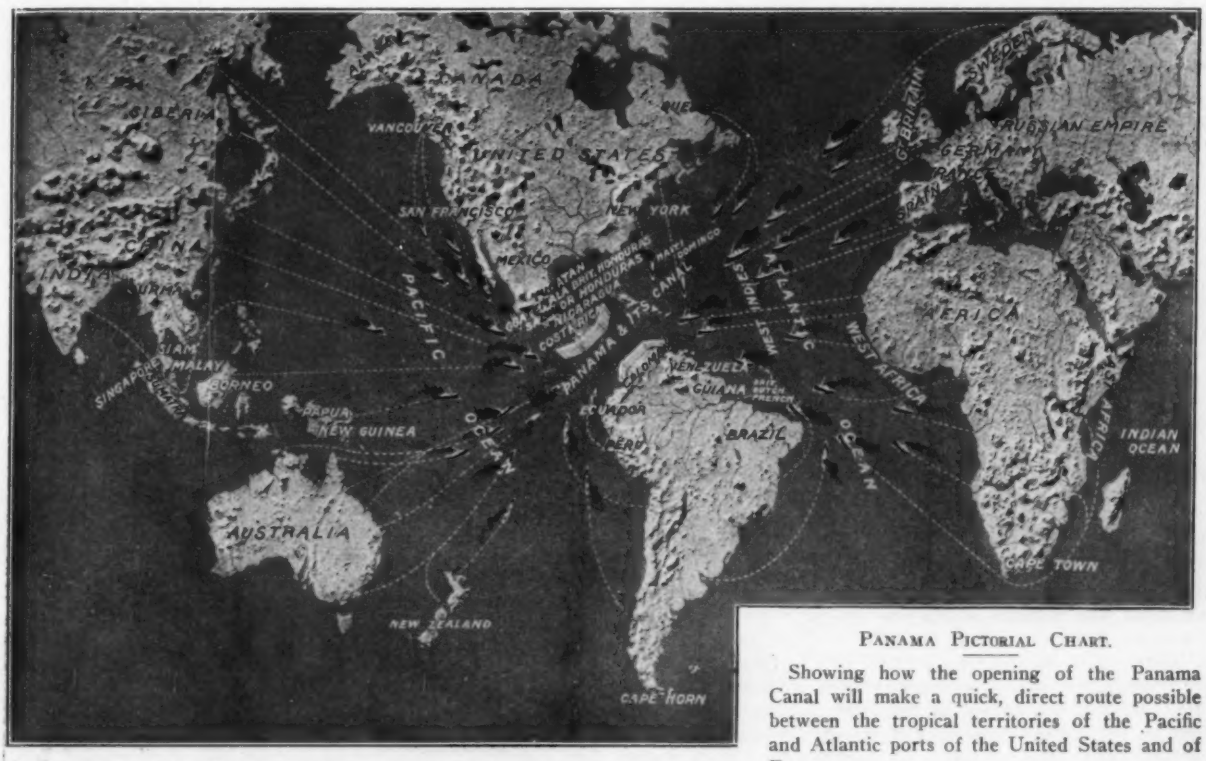
	1910-11. Pounds.	1910-11. Value.	1911-12. Pounds.	1911-12. Value.	1912-13. Pounds.	1912-13. Value.
IMPORTS OF FOREIGN MERCHANDISE—						
Crude India Rubber	72,046,260	$76,244,603	110,210,173	$93,013,255	113,384,359	$90,170,316
Guayule Gum	19,749,522	10,443,157	14,238,625	6,463,787	10,218,191	4,345,088
Gutta Percha	1,648,921	390,548	1,204,406	225,797	480,853	167,313
Gutta Jelutong (Pontianak)	51,420,872	2,872,633	48,795,268	2,255,050	45,345,338	2,174,441
Balata	878,305	624,702	1,517,066	984,012	1,318,598	766,772
Scrap	26,948,000	2,334,870	26,293,192	2,095,605	43,385,456	3,709,238
Total unmanufactured imports (*a*)	172,691,880	$92,910,513	202,258,730	$105,037,506	214,132,795	$101,333,168
Manufactures of India Rubber	.....	$875,125	.....	$874,736	.....	$1,217,236
Manufactures of Gutta Percha	.....	61,283	.....	41,098	.....	77,300
Elasticon, etc.	.....	115,601	.....	87,328	.....	97,452
Total manufactured imports (*b*)	.....	$1,052,009	.....	$1,003,162	.....	$1,391,988
RE-EXPORTS OF FOREIGN MERCHANDISE—						
Crude India Rubber	5,267,588	$5,439,282	5,610,951	$4,890,905	5,272,387	$4,476,379
Balata	264,589	230,575	62,529	38,423	118,334	77,963
Guayule Gum	340,405	175,995	197,948	98,517	83,769	54,669
Gutta Percha	62,391	19,235	1,011	945	22,352	2,665
Scrap	401,231	43,338	302,105	28,196	87,930	10,723
Gutta Jelutong	.....	.....	118,486	6,079	3,000	163
Total unmanufactured re-exports (*c*)	6,336,204	$5,908,425	6,293,030	$5,063,065	5,587,772	$4,622,562
Manufactures of India Rubber	.....	$29,356	.....	$6,681	.....	$7,973
Manufactures of Gutta Percha	.....	8,687	.....	65	.....	27,906
Elasticon, etc.	.....	.....	.....	231	.....	559
Total manufactures re-exported (*d*)	.....	$38,043	.....	$6,977	.....	$36,438
EXPORTS OF DOMESTIC MANUFACTURES—						
Scrap	7,049,739	$723,664	7,336,924	$780,188	7,269,465	$880,442
Reclaimed Rubber	4,994,527	781,650	5,397,806	875,501	5,413,247	932,904
Manufactures of India Rubber and Gutta Percha	.....	10,947,248	.....	11,167,289	.....	12,511,548
Total domestic manufactures exported (*e*)	.....	$12,452,562	.....	$12,822,978	.....	$14,324,894
GRAND TOTALS—						
Imports (*a*) and (*b*)	.....	$93,962,522	.....	$106,040,668	.....	$102,725,156
Less re-exports (*c*) and (*d*)	.....	5,946,468	.....	5,070,042	.....	4,659,000
Consumption of foreign imports	.....	$88,016,054	.....	$100,970,626	.....	$98,066,156
Exports of domestic merchandise (*e*)	.....	$12,452,562	.....	$12,822,978	.....	$14,324,894

Shall We Lose the Panama Trade?

THE most wonderful sight in New York City is not its sky-piercing buildings, its panorama of harbor and shipping or its many hundred miles of house-lined streets. It is the vast, sweeping tide of humanity which, between four and six o'clock, is seen moving up Park Row and across City Hall Park toward the entrance of Brooklyn bridge. In every direction, as far as the eye can reach, people are moving toward one common point. Here they come, thousands, tens of thousands, hundreds of thousands, each intent upon his own errand, little mindful of the tremendous aggregate of which he is a part. Some are strangers, passing for the first time. Others, who have crossed many times, are passing for the last time—going to their homes to die. But their places will be taken by still others and tomorrow the throng will be mightier than today, as that of today is greater than that of yesterday.

Yet within the memory of men not old that place of thronging myriads was a street of quiet, second-class hotels, decorous newspapers and sleepy shops. Then the Brooklyn bridge was built and the traffic of the sundered communities passed through the erstwhile quiet streets. The men who saw the building of Brooklyn bridge could not imagine the crowds which now converge at the bridge's entrance because such a conception was beyond the imagination of man. But some could see more clearly than others and were able to declare that the traffic would increase until the capacity of the bridge would be inadequate for its work; while the great majority of New Yorkers regarded the undertaking with indifference or cheap cynicism.

Another generation has grown up and looks with the same listless indifference upon another undertaking, as great in a world-sense as the Brooklyn bridge is locally. Three hundred and ninety-three years have heard of the project of a canal across the isthmus, joining the land-masses of North and South America. A few more months and the commerce of the world will flow through the long-delayed opening in the bar which has existed within knowledge of man. In the first months there will pass through the locks of the canal a tonnage greater than the entire flotilla of the world when Charles the Fifth first considered piercing the isthmus, yet this will be a mere trickle compared with the mighty currents which will flow with ever-increasing volume until the capacity of the canal is overtaxed. The crowd of vessels moving upon Panama will be like the crowds of people converging at Brooklyn bridge. And they will carry not only vast quantities of goods, but they will carry men—merchants with alert brains and wide-open eyes and with money in their pockets and more in their tills at home. They are going there to buy and to sell, to offer bargains and to find them. From every country of the world comes the same story of making ready for the trade of Panama—that is, from every country except our own. But there is equal unanimity in the report that our own business men are fast asleep, comfortably dreaming of the great benefit which will come to them from the canal which their government has built, and without the slightest evidence of waking up and really grasping those benefits which other hands—British, French and German—are eagerly reaching out to secure. The trade—the profits—are there. Whoever goes after them is going to get them, and when he gets them he is going to keep them.



PANAMA PICTORIAL CHART.

Showing how the opening of the Panama Canal will make a quick, direct route possible between the tropical territories of the Pacific and Atlantic ports of the United States and of Europe.

Courtesy of Tropical Exploitation Syndicate, Limited, London.

Panama makes a small spot on the map of the world, but the world is big and the world is going to Panama. The republic, little as it seems, is more than half as large as all New England. There are millions of acres of fertile land, most of it untouched, or scarcely touched by man. But the marvelous growth of the tropical plants is not more rapid than will be the transformation of those acres into gardens,

Courtesy of Puck, New York.

The Awakening of Rip Van Winkle Uncle Sam.

with the world for a market. Yesterday Panama was rocks, swamp and tropic forest. Tomorrow it will be city and gardens. Those who doubt it are the same men who said that Brooklyn bridge never could be made to pay. The canal zone will be an arcade, a fair, a mart for the world's goods, a meeting ground as well as a passage way for the merchants and manufacturers of every land.

Let our business men make no mistake about this matter. If they establish agencies in Panama with full lines of samples they will gain customers in Norway and Kamschatka, as well as in Panama and Costa Rica. The cost may well be met by the local trade, and there will be profit from the beginning for those who manage wisely and are early on the ground.

Panama is nearer to New York than is Salt Lake City, both in miles and in cost of transportation. The familiar excuses for sloth on the part of our business men are absolutely lacking. Order is maintained by the little republic and guaranteed by the United States. The money system is identical with our own. The sanitation, in charge of the United States government, is the best in the world. Health conditions are better than in any city of the United States. Banking facilities, good now, will soon be identical with those of the United States, through the establishment of American branch banks, provided for in the new currency law. The postage rate from the United States is the same as that within our own territory. Panama is at the beginning of a "boom," the greatest that the world has ever seen or ever will see. It is an event unique in the history of the world and one which the physical conformation of our planet decrees shall remain such. It is the beginning of an era, not transient but enduring while the world shall endure.

New York is more than three thousand miles nearer Panama than the average of the European ports from which sailings for the canal will be made. Yet the European merchants are preparing to take the Panama trade and the Americans are letting them do it. The reports of the activity of the former and the inactivity of the latter are too persistent and too precise to doubt. More than that, the Americans are actually turning away trade which is offered them, through a provincial insistence in following their own accustomed methods of business. In Panama, as in the rest of Spanish America, and, indeed, the rest of the world, business is based on a system of long-time credits, and there is no use expecting a merchant who sells on credit to pay cash for his goods, especially when others are ready to supply him with the credit. The wisdom of extending this needed credit—with due regard for ordinary prudence—is obvious. An agent on the ground need have little difficulty in knowing to whom he may give credit.

Fortunately, the new currency law makes it possible for the American merchant to be more liberal in the matter of credits than has been the case in the past. Our system of narrow and rigid credits has been largely the result of our inelastic currency system. But the new law, which provides for bank note issues based on sound commercial paper, removes the dread of a panic from the business man who, in the past, has dignified his timidity with the name of conservatism. It is the opinion of the leading financial authori-

Copyright by Underwood & Underwood.

First Boat Passing Through Gatun Locks.

ties of the country that there never will be another panic. "Nor is there any reason," said one of them in discussing the measure, "why a good business man with a sound business, should ever again be forced into bankruptcy."

The business man who has assets can now borrow money and be free to conduct his business on a more liberal scale than before, both in the matter of volume and of credits. Thus is removed the last "lion in the path" of the American manufacturer who would add to his profits by foreign sales. Panama offers him opportunity for his first world venture. Any kind of goods can be sold there that can be sold in New Orleans. If he has the intelligence to produce good wares, the same intelligence will sell them. Is he a lineal descen-

dant of the men who actually existed and who said that the Brooklyn bridge would never carry enough traffic to pay the toll-takers? Is he going to allow this great bazaar of the

CATHEDRAL SQUARE AND HOTEL GRAND CENTRAL, PANAMA CITY.

world's commerce to be filled with the goods of every country but that of the nation which pays the bills? If he yawns, stretches, admits that he has heard the alarm clock telling him that now is the time to get up and go after Panama trade

WILD *Castilloa*, SHOWING STUMP OF BIG TREE FROM WHICH SPROUTS HAD GROWN.

—and decides that he will go after it as soon as he has slept a little longer—he will be eliminated from the situation and the British and German traders may continue their cheerful gibes about the canal which we built for them.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

THE ONLY "HEVEAS" IN PANAMA.

SOME four years ago the editor of THE INDIA RUBBER WORLD sent to friends in Panama 1,000 *Hevea* seeds. These were planted, but white ants, armadillos and other enemies destroyed

PANAMA'S ONLY *Hevea* TREES.

most of them. A few survived, however, and are growing in the jungle on the Azuero peninsula. As far as known, these are the only *Heveas* in the Republic of Panama.

INDIA RUBBER IN SHIPBUILDING.

In a couple of articles in the issue of THE INDIA RUBBER WORLD of October, 1912 (pages 13 to 16), the subjects of "India Rubber in the Navy" and "Rubber Manufactures in Marine Warfare" were discussed. The numerous small articles composing a battle ship's equipment were described in detail.

Since then a broader question has arisen with reference to the internal or external use of rubber in shipbuilding, in the form of a suggestion for its employment in the bodies of ships for protection against the penetration of water.

This proposal emanated from an Austrian scientist at a Vienna meeting of German scientific men held last fall. His contention was that when a thick sheet of rubber with a high proportion of resin was pierced by a projectile the rubber, in consequence of its elasticity, would tend to return to its original position, and that the resin would stop the puncture so that no water, or at most a very little, could penetrate into the body of the ship. He made the further suggestion that in order to have this principle adopted on a large scale rubber of a very inferior and therefore of an inexpensive grade could be used. But one of the other scientists present pointed out that there were strong objections to the use of inferior rubber, because of its lack of durability. He went on to state that the life of a modern man of war ranged from twenty to thirty years, and it could hardly be expected that inferior rubber would continue to hold its original elasticity that length of time, as cheap resinous products are likely to soon become hard and brittle.

Annual Meeting of Rubber Club of America.

THE annual meeting of the Rubber Club of America was held in the handsome gallery of the Art Club, Boston, on the evening of Tuesday, April 21.

President George B. Hodgman presided and the reports of officers were read and approved. From the secretary's report it was learned that the membership showed a slight gain over last year, there now being 66 firm members (an increase of 15), 200 active members (the same number as a year ago) and 58 associate members (a decrease of four). During the year, six members died. Edward B. Kelley, of the Mechanical Fabric Co., Providence, an active member, and one of the most popular, died May 13, 1913. Frederick M. Shepard, of New York, an honorary member, passed away June 30. Alexander Macpherson, of the Oxford Rubber Co., Cambridge, Massachusetts, an associate member, died October 7. Jacques Huber, an honorary member, of the Museu Goeldi, Pará, Brazil, died at that city February 18, 1914. George P. Whitmore, of the Revere Rubber Co., one of the founders of the New England Rubber Club, and its first treasurer, was taken February 22, and J. Elwood Lee, of the Lee Tire & Rubber Co., Conshohocken, Pennsylvania, a firm member, died April 8.

The treasurer's report gave an account of the receipts and expenditures of the club, and showed a balance of over $1,400 on the right side.

THE ELECTION OF OFFICERS.

The election of officers was the next business and resulted in the choice of the following:

President, George B. Hodgman, Hodgman Rubber Co., New York; vice-president, Frederick H. Jones, Tyer Rubber Co., Andover, Massachusetts; treasurer, J. Frank Dunbar, Boston; secretary, H. S. Vorhis, New York.

Honorary vice-presidents: Augustus O. Bourn, L. Dewart Apsley, John H. Flint, Alexander M. Paul, Arthur W. Stedman, Henry C. Pearson and Frederic C. Hood.

Directors: Francis H. Appleton, F. H. Appleton & Son, Boston; H. T. Dunn, Fisk Rubber Co., Chicopee Falls, Massachusetts; H. S. Firestone, Firestone Tire & Rubber Co., Akron; George E. Hall, Boston Woven Hose & Rubber Co., Cambridgeport, Massachusetts; Howard E. Raymond, The B. F. Goodrich Co., Akron; Homer E. Sawyer, United States Rubber Co., New York; Henry Spadone, Gutta Percha & Rubber Manufacturing Co., New York; Elisha S. Williams, Rubber Goods Manufacturing Co., New York, and Albert Zeiss, Arnold & Zeiss, New York.

No other business coming before the meeting, it adjourned. This was followed by a meeting of the Executive Committee, which consisted of Frederick H. Jones, chairman, Henry C. Pearson, Frederic C. Hood, Albert Zeiss and Henry Spadone. At this meeting the various actions of the directors were approved. It was decided to locate an office exclusively for the business of the Club, at 17 Madison avenue, New York, to secure the entire services of Secretary Vorhis and to join the Chamber of Commerce of the United States of America.

The following committees were chosen:

Nominating Committee: George E. Hall, Boston Woven Hose Co., Cambridgeport, chairman; Hon. L. D. Apsley, Apsley Rubber Co.; Charles T. Wilson, Wilson Trading Co., New York; E. E. Wadbrook, Arnold & Zeiss, New York, and Russell Parker, Parker Stearns & Co., Brooklyn.

Auditing Committee: E. F. Dewing, Boston Rubber Shoe Co., and J. H. Learned, Revere Rubber Co.

Entertainment Committee: W. H. Arnold, Arnold & Zeiss, New York, chairman; W. L. Procter, United States Rubber Co., New York; Ira F. Burnham, Stoughton Rubber Co., Boston; E. H. Kidder, United States Tire Co., Boston, and A. A. Glidden, Hood Rubber Co., East Watertown, Massachusetts.

Sports Committee: William L. Pitcher, Easthampton Rubber Thread Co., Easthampton, Massachusetts, chairman; Francis H. Appleton, Jr., F. H. Appleton & Son, Boston; John S. Clapp, New Jersey Rubber Co., Boston; Philip E. Young, Acushnet Process Co., New Bedford, Massachusetts, and Harold P. Fuller, E. H. Clapp Rubber Co., Boston.

Dinner Committee: William E. Barker, United States Rubber Co., New York, chairman; Robert L. Rice, Hood Rubber Co.; Theodore W. Bassett, U. S. Rubber Reclaiming Co., New York, and Andrew H. Brown, Meyer & Brown, New York.

Committee on Resolutions: E. E. Wadbrook, Arnold & Zeiss, New York, chairman; Arthur W. Stedman, Boston; Henry C. Pearson, THE INDIA RUBBER WORLD, New York.

THE DINNER.

It was a happy idea of the Dinner Committee to have the long head table and the three radial ones set in the big picture gallery of the Art Club, where the walls were covered with a wonderful collection of examples of the graphic art from the European centers. The tables were handsomely decorated with jonquils and greenery. At President Hodgman's right was the speaker of the evening, Col. Henry L. Kincaide, of Boston, and at the head table were also seated several of the honorary vice-presidents. Previous to being seated, however, the president proposed that in view of the happenings in Congress and in Mexican waters, it would be appropriate to sing "America," which was done with perhaps more real patriotic feeling than artistic harmony.

Of the dinner it need only be said that it was excellent, well served, and highly appreciated by all. At its conclusion, the president proposed a silent toast to the deceased members, after which he delivered the following address:

ADDRESS OF PRESIDENT GEORGE B. HODGMAN.

"Since the last annual meeting of the Rubber Club of America, held a year ago in Boston, I feel that we have been able to make considerable progress along the lines suggested by our former president, Mr. Frederic C. Hood, namely, that this club should be of benefit and help to the entire rubber industry of the United States.

"This has been made possible by the decision to engage a secretary who would give a certain portion of his time to the necessary work of the club, because heretofore, even with the best intentions and at the cost of much self-sacrifice, the officers had not been able to give to the club's affairs the attention which this work requires, for men who are engaged in active business cannot without sacrificing more time than should be expected of them, look after the various details of the work of a business organization such as that into which our club has now developed. Therefore with the efficient aid of Mr. H. S. Vorhis, who was appointed secretary last July, we have been able to go forward as we could not have done before. It is my intention to mention briefly certain phases of our work for the past year, and to point out the possibilities for the future."

He then went on to mention the efforts made by a committee appointed by the club in 1912, in conjunction with a committee appointed by the International Rubber Conference held in September of that year, to decide upon some satisfactory method of nomenclature for the various sorts of rubber. While this question has received a great deal of attention from these two committees working together, it was thought, owing to the present effort to standardize plantation rubbers, that the matter should be left in abeyance for the present. Mr. Hodgman then devoted a paragraph to the very important matter of rubber stealings,

and told what efforts had been made, with the co-operation of prominent scrap dealers, to suppress this exceedingly annoying practice; and he asked all the members of the trade to communicate any information regarding the stealing of rubber that might come to their knowledge to the secretary of the club.

He told what had been done in the way of establishing in the rubber trade a system of arbitration, under the auspices of the Chamber of Commerce of the State of New York, and mentioned that a number of disputes relative to the quality of rubber had been arbitrated with a vast saving of time and expense and to the great advantage of both sides. He then took up several very interesting topics, including rubber statistics and a new grouping of club membership and continued as follows:

RUBBER STATISTICS.

"The fact that there have been no reliable statistics collected showing the extent and importance of the rubber industry in our country, prompted the Executive Committee to make an attempt to secure such statistics for the year 1912, believing that such a record, if it could be secured, would show that the manufacture and sale of rubber goods had reached total proportions which were not actually realized, and would place our industry in its proper position among the great industries of the country. The statistics furnished through the Census Bureau at long intervals are not complete in many ways. It was therefore decided to submit an information blank to all the rubber manufacturers who could be reached, asking their co-operation. . . . A list was prepared, and statistical blanks were sent out. This being a new departure, the number of responses received up to date has been very gratifying, although it was necessary to send out a second letter, attempting to explain more fully the situation, and to point out that all the replies were kept absolutely confidential, owing to the fact that no manufacturer was required to sign the blank sent to him, as it had a number only, and the replies were to be seen by our secretary only, who as you know has no connection with the rubber trade except as secretary of our club.

"In spite of this, however, some manufacturers seemed to feel that we were asking them to divulge private information which might become public, but these are a very few in number in comparison with those who have replied, and I am glad to say among the latter are the largest concerns in the country. Although these statistics when collected may not be complete, owing to the number of smaller manufacturers who have not responded, they will at least give a fair idea of the extent of our industry, and will be of great interest, and may result in pointing out that in certain lines there is now an over-production, and prevent the inauguration of new enterprises, which may desire to enter certain lines of the rubber business under the impression, which I believe has existed, that any new manufacturer of rubber goods would find a large and profitable market for his product.

GROUP MEMBERSHIP.

"It is one of the fond hopes and expectations of your president that the Rubber Club may in the near future extend its sphere of usefulness by having its membership sub-divided into groups, each representing the particular line of business in which our members are engaged. This has been done very successfully by the Silk Association, which is one of the strongest trade organizations in existence today, and whose membership to a large extent is divided into organized and classified divisions, such as importers, manufacturers of yarns, sewing silks, dress silks, ribbons, etc., and I see no reason why our organization cannot have its own classified divisions or groups."

He then enumerated 16 groups into which the rubber trade might logically be divided, and continued:

"It is not likely at first that all of these groups would be possible, but at least there could be formed groups of seven or eight of the more important branches of our trade. Those of our members who would be included in these divisions, in addition to their regular membership in the club, could have their separate organizations, and do special work for the interest of their branch of the industry, but all would co-operate with the main organization in matters of general interest and benefit, and all of these organizations should have their office with the office of the Rubber Club, with the secretary of the Rubber Club as their secretary. One or two organizations already in existence are considering this matter favorably, and when the plan has been fully matured it will be presented to our membership, with suggestion as to the amendment of our constitution to permit this change if it is considered an advantageous plan."

TARIFF AND LEGISLATION.

He spoke of the changed conditions of the American rubber manufacturing industry under the new tariff and urged that all the club members and others interested in this industry should watch for undervaluations on imported goods and communicate any such case to Mr. Vorhis, the secretary. He also dwelt on the necessity of watching Federal legislation, and spoke of the Lindquist Bill, popularly known as the Pure Fabric Bill, which, if passed, would be most detrimental to the footwear manufacturers; and he continued:

"We have decided to ally ourselves with the Chamber of Commerce of the United States of America, an organization whose headquarters are in Washington, and whose particular function is to protect the rights and further the interests of American manufacturers, and through this source we will be able to learn of any proposed legislative actions which may affect our interests."

He stated that the growing activities of the club had made it absolutely essential that the secretary should devote his entire time and energy to this work and added that after the 1st of May Mr. Vorhis would occupy all of his time, instead of part of his time, as during the past year, with the work of the club. He then concluded his address as follows:

INFORMING THE PUBLIC REGARDING RUBBER GOODS

"It seems to me that there is too little knowledge of the proper sort on the part of the public at the present time concerning rubber goods and their uses. The manufacture of rubber goods appears to many people to be something surrounded with more or less mystery, but this does not prevent these same people, in their use of our various products, from expecting service far beyond what some articles were intended, or it is possible, to give for the prices which they are willing to pay.

"I believe that a properly and conservatively conducted campaign of publicity as to the nature of rubber goods, and education as to their proper use, would appeal to thoughtful people, and could be conducted through our club at little expense and with much profit. People are always ready to read what is interesting, and this subject has possibilities of interest which, if treated properly, should give it wide publicity.

THE CLUB'S SOCIAL SIDE.

"The social activities of our club have by no means been lost sight of on account of our having devoted more energy to the business side. Our summer outing at the Belmont Springs Country Club last July was well attended and was a very enjoyable occasion. Our annual banquet in January of this year in New York had a record attendance, and I believe that all of us who were able to be present enjoyed the opportunity for good fellowship, and the interesting addresses which were given by our distinguished guests.

"It is the intention of the officers of the club also to make our annual meetings of more general interest by having an informal dinner at these times, such as is being given this evening. We realize that our club was formed originally to promote sociability and good fellowship among its members, and that we must not lose sight of this important feature, for it is by getting together on these occasions that we become better acquainted, and our

endeavors along business lines are very much helped by these social gatherings.

"In conclusion I want to express my appreciation of the faithful work of our Executive Committee. These men, some of whom live in New England, have been present at each of our quarterly meetings in New York, except in the case of illness, and it has only been through their co-operation and interest that the success of the past year has been made possible. It is a service which, given with considerable sacrifice, is something for which no money can pay, and has been given with the sole purpose of benefiting first of all our own membership, and indirectly the rubber industry as a whole.

"I bespeak from the members of the club your hearty support in all our endeavors, and feel that if this is done your organization will become increasingly powerful as the years roll on. Co-operation in business is the order of the day. Our industry has been somewhat lacking in this principle in a broad way. The Rubber Club furnishes the means for all of us to work together, and to put our industry in the place where it rightfully belongs."

The address elicited hearty applause, and when this subsided the president introduced Colonel Henry L. Kincaide, of Boston.

COLONEL KINCAIDE'S ADDRESS.

The speaker opened his remarks by explaining that he was a member of the party representing the Boston Chamber of Commerce, who last year made an extended trip to the principal South American cities. Then, starting with the Panama Canal, which he considered the greatest engineering feat in the history of the New World, and one of the most important promoters of commerce, he justified the decision to have a lock canal rather than to attempt one at sea-level. He explained how the present canal is considered immune from attack either by water, land or even from the air above.

South America, he said, was an interesting country from every view-point. For the first thousand miles south of Panama it is most dreary. The great mountains frown down upon the narrow seacoast. There are few harbors, none where steamers can be docked, but where all freight must be lightered. This showed the necessity of careful, secure packing, for in many places the handling seemed needlessly rough, as if the laborers were rather anxious that the cases might fall apart sufficiently to allow some of their contents to "get lost." Then again, this showed the need of such packing as would prevent the humid atmosphere from reaching and damaging the goods.

Lima, Peru, is an interesting city. Its streets are narrow, the houses mostly having a projecting second story which overhangs the narrow sidewalk. Like all Latin-American cities, it has a central plaza where people congregate in the evening to promenade, and listen to the band concerts. Their summer is our winter, but a strong Antarctic current sweeps up the western coast, which tempers the heat in summer and increases the severity of the winter. Blankets are needed in the summer nights even near the equator. The mountains are so near the seacoast that many of the cities are built on terraces on the mountain side. The population of Peru is from 65 to 75 per cent. Indians, peaceable, unprogressive, living in mud huts and content to live without labor. It is next to impossible to inculcate in them any ambition. Peru suffers today from its recent war with Bolivia. There is more or less political unrest there. Mr. Kincaide told of meeting Billingshurst, the acting President, in order to reach whom, he was conducted through several locked doors, each one guarded by soldiers.

In all South American countries except Brazil, Spanish is the language spoken. In Brazil it is Portuguese. The dollar in Panama is worth 50 cents gold. In Chili it is 20 cents. In the Argentine it equals 44 cents, but in Uruguay, so good is the government's credit that its dollar is worth $1.04 our money. In Brazil the pound sterling is exchanged for 15 milreis. In all these countries the cost of living is much higher than in the United States. Everything is more expensive than with us. American $5 shoes cost $9 to $12, and $5 hats sell for $8 to $12. Prices are "take it or leave it." The import duties are in part the cause of these high prices, ranging as they do from 30 to 40 per cent. in all these countries.

The English and the Germans are ahead of us in South America. They already have an established trade. They have learned to cater to the tastes, customs and character of the Latin-American merchants. The Englishmen and Germans bring their ships there. They invest their money there; they bank there. There isn't an American bank in all South America. Every bill of exchange goes through a foreign bank, and you may be sure each one is scrutinized very closely, and prices and terms are therefore revealed to our business competitors in Europe. It is an absolute necessity, if we would develop our commerce, that we should have an American bank, with a branch bank in each of the leading commercial centers.

Bolivia is somewhat more advanced than Peru. Its capital, La Paz, is the highest city in the world. Owing to transportation, cost of living is high. Coal costs $50 per ton, and only three families there use coal for heating. There are 1,000 miles of railways in Bolivia. The country is rich in mines of iron, copper, silver and gold; in fact iron and copper may be seen sticking out on the surface of the mountains. The mines are worked mainly by Americans.

Chili is 2,600 miles long, and for the most part about 100 miles wide. The nation is practically ruled by about 400 families. Valparaiso and Santiago are very enterprising cities. The wealth of the nation comes mainly through its exports of nitrate, which goes all over the world. Santiago is a most attractive city, and is said to have the most beautiful women in the world. The climate is delightful, seldom below 40 degrees or above 70 degrees, with a moisture which makes the city very healthful. The speaker referred to the incident of the American sailors from the U. S. Battleship "Baltimore" and the consequent anti-American sentiment, but Consul Fletcher has done much to inculcate a better feeling, though the people still deem us imperialistic. We must not cross their sensitive natures. Americans, or, in fact, anybody, who wishes to do business with them, must do it their way. There must be no brusqueness, but, on the contrary, extreme courtesy must be maintained. There can be no Yankee "hustle"; no American way of making a town a day. He must camp out on his prospect four, five or six days. The first day he calls and exchanges the most punctilious courtesies, the next, calls and inquires after the merchant's health, perhaps invites him to lunch, at which, however, he must never broach any business subject; two, three, four days more, and then he can ask the merchant to look over his samples. Such is the way the English and German salesmen manoeuvre, and succeed in securing big orders. The Colonel said he could enumerate many cases where lack of this courtesy and thoughtfulness lost trade to American salesmen.

The trip across the Andes is the most wonderful, the most beautiful in the world. From Santiago to Mendoza there is a constant change of scenic beauty. In winter the railway is sometimes blocked by snows for a month at a time, but in summer there can be no more delightful trip than across the mountains into Argentina.

Argentina is the richest country in South America, and one of the most fertile. You ride across a level plain hundreds of miles in extent between Mendoza and Buenos Aires, and the latter city is one of the wonders of the Western Hemisphere. It has a beautiful harbor on which $30,000,000 has already been spent and $20,000,000 more will be expended in making this one of the safest and most commodious in the world. When the speaker was in that city there were 116 steam vessels and 200 sailing vessels in the harbor, and not one bore the American flag.

The imports amount to billions of dollars a year. Our own exports last year were $60,000,000 to Argentina. American goods

are considered better than European and we should have a good market there if we go after it properly and then deliver the goods promptly and packed as requested. The highest and most costly class of merchandise of all kinds that the world produces may be found in its retail stores, and the people have the money to buy it. There are great opportunities for making money there. The speaker told of a 30-year-old passenger on the boat with him who was considered worth between $30,000,000 and $40,000,000. He also spoke of an Italian immigrant who started digging in the streets, then bought a push cart, and afterwards a horse and wagon, peddling the wine which he manufactured. He now is worth between $15,000,000 and $20,000,000.

The park system, subways and highways in Buenos Aires are as fine as in any European capital.

Rio Janeiro is another enterprising, modern city with an excellent harbor, one of the most picturesque in America. The city has a suburb built by the president of Brazil which is a model in every respect. Here working men's homes, picturesque and comfortable, are rented at $6 and $8 a month. Immigrants are especially favored, their expenses are frequently paid to inland points where they are guaranteed employment, or, if they desire, are given tools and seeds and a piece of land to cultivate. On the steamer on which Colonel Kincaide sailed from that city twenty foreigners who had started as immigrants in Brazil, deposited their savings with the purser and to his astonishment those twenty people were taking from the country fifty thousand dollars in gold. In many respects the United States can look to Brazil for enterprise and progress. Sao Paulo is a city of 400,000 population and has an excellent export trade.

What the United States needs is a better acquaintance with the country. More Americans should visit both the East and West coasts. Such trade associations as the Rubber Club of America can help in this direction, and should give their support to increase trade between the United States and our Southern neighbors. The need is for direct cables. We should not be obliged to send our dispatches twice across the ocean. We should have American ships to take our goods there and bring our purchases back. We should have, as other nations do, legation buildings for our consuls, so they would not be obliged to hunt around for rents every time the landlord increases his price. The United States could build a legation building in every large capital in the world, for the price of one battleship. Were we to have all these requirements, inside of ten years the United States would control almost the entire trade of South America.

Colonel Kincaide was listened to with rapt attention, and at the conclusion he was given a round of applause.

President Hodgman then called upon Hency C. Pearson, of THE INDIA RUBBER WORLD, who had just returned from a trip in South America. He said that he had never been more fascinated with any travel story in his life than the one to which he had just listened. If his hearers were to go over the route with Colonel Kincaide they could hardly know more about it than had been given them so graphically this evening. Never before had the speaker seen put into such small compass the many facts of South America. We have been sending Americans there and they have come back and told us something about it, but they hadn't made any such full and accurate reports, nor half so interesting. One point the speaker made was that we Northerners are in some respects stronger in health and more direct in business. We show this in our dealings with them and they resent it. The Boston Chamber of Commerce sent down a courteous and tactful man, and the result is a great benefit for American commerce. We should send down there more such men in the future.

Mr. Pearson then spoke of the courtesy of the Boston Art Club in allowing the Rubber Club of America to hold its meeting and dinner on their premises and proposed a rising vote of thanks—which was heartily given. President Hodgman then read from a slip which had been handed him a report of the capture of Vera Cruz, which had been telephoned from a newspaper office and after a few pertinent remarks declared the meeting closed.

This was one of the most successful and enjoyable meetings the club has ever held and one which will long be remembered by those who participated.

THE RUBBER CLUB WANTS FURTHER STATISTICS.

A FEW weeks ago the secretary of the Rubber Club sent a circular letter to the rubber manufacturers of the United States, asking them for certain statistical matter to be used in the formulation of accurate information about the industry, for the general benefit of all connected with it. He has received a great many replies, particularly from the larger manufacturers, but in order to make these statistics really accurate and valuable they should of course be complete; and as quite a number of manufacturers have as yet not sent in the desired information, the secretary has sent out a second letter, which is reproduced below:

To the Rubber Manufacturers of the United States:

The response to our circular letter of January 23 last, asking the rubber manufacturers of the United States to give us the number of their employees and the value of their total production during the year 1912 has been most satisfactory, many manufacturers evidently realizing the importance of having reliable statistics available in regard to the industry.

There are some firms who have not yet responded to this request, and in order that the statistics when compiled may be complete, we are sending out this second letter (with statistical blank enclosed) requesting that you will assist us in this work.

It is a fact that the statistics of the rubber industry have never before been compiled even by the United States Census Bureau, this industry having been classed in, to a great extent, with other affiliated industries. As a result the importance of the rubber trade has never properly appeared before the public. It was to supply this lack of accurate information that the Rubber Club of America has undertaken this work which our officers and Executive Committee regard as most important. We are very desirous of completing this work within the next month or so, and would ask that you give this letter your immediate attention.

One of the most serious problems that faces American rubber manufacturers today is unintelligent competition, which largely results from the lack of accurate information regarding exact conditions in the industry. People would not invest their money in industries where there is already a great over-production if they knew the facts, or if they had any way of learning the facts. Business is injured through this lack of information.

Kindly note that any information you may give will be absolutely confidential, as it will pass only into the hands of the Secretary of the Club who has no other connection with the rubber industry. The statistical blank bears a number so that your name will not appear on your report.

We trust this method will obviate any possible hesitancy on the part of manufacturers in furnishing these figures.

Upon request we will be pleased to furnish you with a copy of the statistics when compiled.

Very truly yours, RUBBER CLUB OF AMERICA,
April 8, 1914. H. S. Vorhis, Secretary.

RUBBER HEEL WITH BALATA PLUGS.

The advantage that balata has over the standard grades of rubber is its superior friction—its non-slipperiness—which makes it particularly adapted to use in belting. This same quality naturally suggests the use of balata in the making of rubber heels, and a San Francisco inventor has taken out a patent for a rubber heel with two plugs made of balata inserted at the back of the heel, which naturally touches the ground first. As there is not much resiliency in balata, this disadvantage is compensated by two cavities, one over each plug, between the layer of rubber and the leather and forming an air chamber.

THE RUBBER SUNDRIES MANUFACTURERS DINE.

THE fourteenth annual dinner of the Rubber Sundries Manufacturers' Association was held on April 9 at the Waldorf-Astoria, New York. Twenty-seven members and guests were present, and they sat around a large, round table handsomely decorated in red and green, chrysanthemums supplying the red and smilax the green. It was announced as a purely informal dinner, without oratory of any sort, and this promise was lived up to, as there was a noticeable absence of set addresses; but Mr. F. H. Jones, retiring vice-president, who acted as chairman for the evening—in the enforced absence of the president, Alexander M. Paul—made a few spontaneous remarks and then called upon Mr. Howard E. Raymond and Mr. George B. Hodgman, the chairman of the Entertainment Committee, for brief contributions suited to the occasion. Both responded in happy impromptus inspired by the time and place.

The distinctive entertainment of the evening—that is, apart from the social enjoyment of the dinner itself—was the very successful demonstration of Edison's wonderful new Kinetophone, which we have all been reading about for some time—for the great inventor has been working on it for some years—but which very few of us have seen—that is, in successful operation. This invention has now obviously reached a practically perfect stage, as was shown at this "Sundries" dinner, where the words were so perfectly timed to the movement that the actors in the film pictures became to all intents and purposes living beings. Everyone was intensely interested, naturally, in this feature of the evening's entertainment, which lasted nearly an hour and included a number of short plays.

The officers elected for the current year are: Russell Parker, of Parker, Holmes & Co., president, and Chas. J. Davol, of the Davol Rubber Co., vice president. E. E. Huber was re-elected secretary and treasurer, in which capacity he has served for many years.

NEW RUBBER IMPORTING HOUSE.

A new rubber importing company—Dunbar & Co.—was incorporated April 25, under the laws of the State of New York, with an authorized capital stock of $200,000. The company has taken offices at 290 Broadway, New York, where it will deal in crude rubber and allied products.

The active members of the new organization are Frederick W. Dunbar and J. Frank Dunbar, both of whom have been well known to the trade for years. The former was connected with the New York Commercial Co., from 1892 until that concern went into liquidation last year. For several years he lived in Pará and managed the Brazilian end of the business, but more recently he has lived in New York, superintending the buying and selling of rubber for the New York Commercial Co. J. Frank Dunbar was for a number of years connected with A. H. Alden & Co., of Boston, and has long acted as treasurer of the Rubber Club of America.

It is the intention of the new concern to maintain a department of information for the benefit of customers, where they may at all times be informed as to market conditions.

ANNUAL DINNER OF THE RUBBER SUNDRIES MANUFACTURERS' ASSOCIATION.

BALATA BELTING MACHINERY MADE BY DAVID BRIDGE & CO.

The machinery for the manufacture of balata belting used in the plant of the Manheim Manufacturing & Belting Co., Manheim, Pennsylvania, was made by David Bridge & Co., Castleton, England, and was put in place under the personal supervision of John Bridge, a member of the firm.

The Editor's Book Table.

WHO'S WHO IN THE RUBBER WORLD. 1914. EDITED BY A. Staines Manders. Published at the Exhibition Offices, 75, Chancery Lane, London, W.C. [Octavo, 186 pages, board covers. Price 7s. 6d.]

THERE are two points regarding any industry that an intelligent man with an inquiring mind wants to know about: First, who's who in the industry; and second, what's what. And of these two points the first is by far the more interesting. The book, "Who's Who in the Rubber World," just sent out from London, gives all this information as far as the great rubber industry is concerned. It is edited by A. Staines Manders, pretty well known to every rubber man by reason of the fact that he was organizing manager of the London shows held in 1908 and 1911, and also of the London Rubber Exposition, which will occur next June and July—not to mention the Rubber Exposition held in the Grand Central Palace in New York City in the fall of 1912. His association with these exhibition enterprises, covering the last six years, has brought him into contact with practically everyone of importance in every branch of the rubber industry, from Akron to the Philippines, or, if you prefer it alliteratively, from Boston to Borneo.

The first hundred pages of the book are devoted to short biographies of leading rubber men the world over, and as there are twelve or fifteen of these biographies to a page, it will be seen at a glance that Mr. Manders has included in this little book, in abbreviated form, the life story of not far from 1,400 or 1,500 rubber men. The rest of the book is given over to information regarding companies and firms and associations connected with the industry—all in classified form, each classification being arranged geographically, so that any desired information can be very readily found. The list of rubber associations occupies thirty pages. A number of these are planters' associations, and the names of the officers and committee members are given. In the case of rubber clubs with large memberships only the names of the officers are mentioned.

The feature of the book, however, that will undoubtedly attract the most attention and prove most interesting is the department devoted to personal biography. This enables anyone in the trade to get a great deal of information about associates and acquaintances whom he may have known for years and yet regarding whose history he has known but few details; and as a book of reference it goes without saying that "Who's Who" will prove most valuable.

INDIA RUBBER LABORATORY PRACTICE. BY W. A. CASPARI, B.Sc. (Vict.), Ph.D. (Jena), F.I.C. Illustrated. Macmillan & Co., Limited. [Octavo, 191 pages and index, cloth covers. Price 5s. net.]

TO chemists of general training who may be called upon to deal with india rubber in its various forms, "India Rubber Laboratory Practice," by W. A. Caspari, B. Sc., Ph. D., F. I. C., will be found a source of much specialized information on this subject, as it contains strictly practical descriptions of methods which have been practiced by the author in the course of the last ten years, and found to be satisfactory.

Unlike most works of its kind, this book contains but slight mention of the botany and theoretical chemistry of rubber, or of the production of raw material and the mechanical testing of manufactured rubber, the first chapter only being devoted to sources of production, the various forms in which the raw rubber is received by the manufacturer and analysis of the crude or washed product. Chapter 2, which covers 18 pages, contains 17 illustrations, with full descriptions, of the machinery and apparatus required in a well equipped rubber laboratory, as well as the method of their operation. These include washing and mixing mills, drying ovens, etc. Rubber diluents—factice, bitumens, pitches and resins; solid compounding materials—accelerators, fillers, pigments (white, red, black and other), and miscellaneous accessories—naphtha, vulcanizing agents, oils, waxes and fabrics—their physical properties and individual analysis, are successively treated, these being followed by a description of processes for arriving at the specific gravity or density of various substances. Instruction is given for the analysis of manufactured rubber, organic, which it divides into three classes, viz.: Heat-cured goods and ebonite; cold-cured goods; doughs and solvents. Analysis of manufactured rubber, inorganic, is also described, with illustrations of the required apparatus. Gutta percha and balata, their source, analysis, etc., form the subject of chapter 9, which concludes the volume, an appendix containing 7 tables covering the analytical characteristics of crude rubber sorts, conversion of crude into washed rubber prices, etc.

In a review but brief mention can of course be made of the subjects treated, many of which in the book itself are gone into to the fullest possible extent, with no detail of importance omitted. The possibilities offered as a source of information and instruction in methods and practices employed by one familiar with the chemistry of rubber will no doubt, however, be suggested by this brief outline and commend the work to the favorable consideration of those less experienced in treatment of this important commercial article in laboratory practice.

THE TWO AMERICAS. BY GENERAL RAFAEL REYES, EX-PRESIdent of the Republic of Colombia. Translated from the Spanish by Leopold Grahame. With 31 illustrations and photographs. New York: Frederick A. Stokes & Co. [Octavo, 324 pages, board covers. Price, $2.50 net.]

NO one will be disposed to deny these two statements, viz.—that the great cynosure for the world's attention at the present time, and probably for some months to come, is the Panama Canal; and secondly, that the most marked material development of the present century will take place in South America. So it behooves every man who wishes to be familiar with great world events, and particularly every American business man—using the term "business" in a large way—to acquaint himself with the great republics to the south. And there is no way in which he can make a better start on this course of education than by reading the book "The Two Americas" by General Reyes, ex-president of the Republic of Colombia.

While the book is entitled "The Two Americas," very little attention is devoted to North America—and this is fortunate, as to all American readers at least North America is familiar ground. General Reyes has spent, at one time and another, both in private and in official capacity, much time in the United States, so that he knows the general way in which people of this country view the South Americans. He has found— speaking of the average citizen—an unfortunate ignorance in this country of South American history, conditions and development. That undoubtedly has been the case hitherto, but with the opening of the canal and the tremendous opportunities that will follow in its wake, no one can hereafter call himself well informed who does not have an approximately accurate idea of matters in the South.

Primarily, the writing of this book was evidently undertaken from a large sense of patriotism. While a Colombian, General Reyes is even more a South American. His sympathy embraces the entire continent, from Caracas to Magellan, and he has written this book not only to show to the people of South America what all other South Americans are like, but to show to the people of the world, and especially to those of North America, what South America really is.

We have here no "touch and go" description of travels, such as are ordinarily written by foreigners touring through a country and getting their information from car windows. General Reyes took an extended trip through Brazil, Uruguay, Argentina, Chile, Peru, Ecuador and Colombia. His position as an ex-president of one of the republics and his extensive acquaintance opened every door of information to him, and the fact that he had lived practically all his life in South America and had taken a prominent part in its affairs enabled him to view the conditions in all the different republics with an intelligent and sympathetic eye.

He devotes an interesting chapter to the Panama Canal, and while naturally he cannot entirely conceal a sense of grievance over the revolution that bereft Colombia of the isthmus—for this happened when he was president—he still can discuss this matter without any suggestion of rancor. He hopes that in the immediate future the United States Government will make due amends for the Colombian loss inflicted by the Panama revolution; but his feeling about the canal does not prevent him from speaking in eulogy of Mr. Roosevelt's recent utterances in South America. In fact he devotes ten pages of his concluding chapter to reproducing in part Mr. Roosevelt's address delivered last October in Rio de Janeiro.

To be sure there is very little said about rubber in this volume, but that should make it none the less interesting to rubber men, because one can no more conceive of South America without its great Amazon Valley than he can conceive of the United States without the great Mississippi system; and in the development of South America the Amazon must necessarily largely share—and that means the development of its rubber industry. It is quite true that at present the Eastern plantations are pushing the Amazonians rather hard, but it is unthinkable that this vast rubber territory planted by the hand of nature on the world's most wonderful waterway shall for any great length of time or to any considerable extent fall into disuse.

THE FUTURE OF TROPICAL AMERICA, THE TROPICAL EXploitation Syndicate, Ltd., 28 Mincing Lane, London. [Paper, 92 pages, with 32 plates. Price, 1*s.* net.]

AMONG the immediate effects of the opening of the Panama Canal will be a demand for information regarding tropical America, its natural features and products, as well as the opportunities the new waterway will open to American import and export commerce. While the facts are to be found in bulky library volumes, what is wanted is a summary in convenient form of the leading points of interest, available for prompt reference.

Such a compilation is that recently issued by the above-named syndicate, which recognizes the fact that while two thousand years ago it was said that "all roads lead to Rome," tomorrow half the commercial roads of the world will lead through the Panama Canal.

The various countries of tropical America are classified in this work into four groups—Central America, East Coast of South America, West Coast of South America and the West Indies. Under the first group are: Panama, Costa Rica, Nicaragua, Republic of Honduras, Salvador, British Honduras and Guatemala. Yucatan (Mexico) is also included. In each case the products are described—cocoanuts, bananas, cacao, coffee and sugar being in most cases prominent.

Referring to rubber, the book contains this interesting paragraph: "Natural rubber grows wild in immense quantities in the forest-clad district of Darien, and a syndicate is already in operation in Darien producing rubber of excellent quality. In every part of Panama rubber is found, in particular the species called *Castilloa*, which thrives everywhere. At one time rubber was exported in quantity, but as the natives obtained it by the simple method of cutting down the trees, the more easily accessible plantations were gradually destroyed. To the individual or company provided with sufficient capital there is doubtless here a prospect of good returns, but little can be done without expenditure and patience to await development of plantations."

In Nicaragua, rubber has greatly suffered through too frequent tapping by the natives, but in view of the steps taken by the government for the protection of the industry, a great development is anticipated. The supply of wild rubber in the Republic of Honduras is now becoming exhausted, while rubber planting is a comparatively modern industry in that country. In British Honduras rubber is receiving close attention and *Castilloa* is found wild. The Pará variety has been introduced and seems to flourish even more freely than the native species. Guatemala, having a climate tropical in the lowlands and temperate in the more elevated portions, can, it is remarked, grow with success various kinds of produce, including rubber.

The second group of tropical countries includes: Colombia, Venezuela, British, Dutch and French Guiana and Tropical Brazil. Among the points urged are the suitability of British Guiana for the cultivation of rubber and for the growth of balata, the supply of which is said to be inexhaustible. The importance of the Brazilian export of rubber is also commented upon.

Crossing the Continent, the third group is reached, consisting of Ecuador and Peru. With respect to the former country, the accessible rubber supply from wild trees is said to have almost ceased, attention being now paid to planting. In the concluding chapters of the work the general characteristics of cocoanuts, cocoa, coffee, limes, sugar, bananas and pineapples are dealt with.

Owing to the systematic classified arrangement of the information affecting the various products of the different countries treated, the work will be found of much value for reference, while the details of currency, weights and measures will be found equally useful.

The 32 illustrations bring out the principal features of the comprehensive subject treated.

LE CAOUTCHOUC; SA CHIMIE NOUVELLE; SES SYNTHESES. By A. Dubosc, Chemical Engineer, and A. Luttringer, Doctor of Sciences. Paris, 1914, A. D. Cillard. [Paper, 8vo, 606 pages.]

IN this comprehensive work the subject has been divided into three principal sections—the first dealing with the general question of natural rubber and the second with its formation and analysis, while the third and final division treats of its synthesis. Thus each section naturally leads up to the succeeding one. The object of the authors has been to group together the references before scattered through various publications, with the addition of their personal observations on the subjects embraced in the title.

After a review of the productive capacity of the various rubber-producing regions, with special reference to the plantations in Asia and Oceania, the question of resinous rubbers is dealt with, followed by a discussion of reclaimed rubber under various heads, as well as references to standard patents on processes. In the following section, the physical and chemical properties of crude rubber are discussed, as well as coagulation in its different forms. This discussion serves as an appropriate introduction to the third section, which is devoted to the various processes of rubber synthesis discovered in recent years by leading scientists.

In the concluding paragraphs of the work reference is made to the statement of Dr. Duisberg at New York in 1912, to the effect that tho the solution of the synthetic problem was very near, it had not been as yet definitely and practically discovered. The opinion of the authors of this work is summarized in the view that two solutions, both of industrial possibility, have been put forward—that of Dr. Hoffmann and Dr. Coutelle, of the Bayer Works, and that of the English group led by Messrs.

Perkin, Strange and Mathews. Cheap and abundant raw material is a point of the first importance in the production of synthetic rubber. Several raw materials are referred to as possible bases of future synthetic rubber, such as acetylene and carburet of calcium.

In the concluding words of the volume:

"As between the cup and the lip, there is room between the laboratory and the factory for some disappointments and for a good deal of work."

The book is a valuable contribution to rubber literature, particularly with reference to synthetic rubber.

NEW TRADE PUBLICATIONS.

"REACH 1914 BASEBALL" is the title of a catalog which has just been issued by the A. J. Reach Co., of Philadelphia, enumerating a very complete line of baseball supplies suitable for the 1914 season. Five pages of this thirty-two page booklet are devoted to baseballs, no less than 23 varieties of which—some with rubber centers, some with rubber surrounded cork centers, and one, the "Lively Flyer," made entirely of rubber—are described and illustrated. Twenty pages are occupied by mitts and gloves of styles appropriate for catchers, basemen, fielders, etc.; bats, masks and body protectors occupy two pages each, the final page and inside back cover showing bat and uniform bags, bases, plates of rubber, etc., score cards and shoe plates. It would seem practicable to select from this catalog any article required by any player, the illustrations, descriptions and prices being particularly clear.

The North British Rubber Co., Limited, Castle Mills, Edinburgh, has just sent this office a most attractive booklet, the 16 pages of which are devoted to description and reproductions in colors of various designs in rubber floor tiling as made by this company, also mentioning rubber mats, stair treads, etc. The colored photographs represent tiling as laid in offices of insurance companies, banks, mercantile houses and on decks of steamships, tho its suitability for use in other places—such as hospitals, churches, public offices, libraries, etc.—is apparent.

The Acme Rubber Manufacturing Co., of Trenton, New Jersey, has distributed among the trade a booklet of 16 pages descriptive of Acme Red Letter tires, and containing prices, etc. Every tire put out by this company bears the name of the company, a serial number and the brand "Acme" in large red letters, and tires from which these marks have not been effaced are guaranteed, the nature of the guarantee being described on page 13 of this booklet. Red letter tires are hand made with wrapped tread and given single cure in open steam, while Acme Red Letter inner tubes are described as being made extra heavy and united by a special process so that slow leaks cannot develop at the splice. These tires are made plain tread, dimple tread—anti skid and Hemisphere tread—anti skid. Schedules of weight and inflation and of interchangeable sizes are given, also advice to tire users and telegraphic code. The booklet also contains description and price list of Acme inner liners. It has 7 illustrations, including a photograph of the company's plant at Trenton.

A four-page folder of newspaper size is being sent out by the Firestone Tire & Rubber Co. to its dealers all over the country, and largely in their interest. It contains numerous suggestions which, if properly followed out by the dealers, would probably result in greatly increased sales. The inside pages show proofs of electrotypes in various sizes ready for the dealers' use in their local papers, space being left in each case for the insertion of the dealer's name in type. The last page shows special electrotypes, etchings or halftones, illustrating various types of tires, tubes, repair apparatus, etc. Each folder is accompanied by a postal card for use by the dealer in sending in his order for cuts, which are furnished absolutely free and delivered all charges prepaid.

MOTOR TRUCKS OF AMERICA.

On account of the enthusiastic reception accorded last year to the first volume of "Motor Trucks of America," the B. F. Goodrich Co., of Akron, has been encouraged to make the issue a yearly one. Volume 2 has accordingly been published and contains a wealth of information about more than ninety motor trucks built in the United States; thus placing full and accurate details at the disposal of prospective buyers. The illustrations are in the highest style of execution, while the specifications include in most cases the Goodrich tires, either as regular or optional equipment.

With the details given the customer can appreciate how each car looks and what it claims to do. Motor truck buyers require such data about motor transportation as will enable them to select the right truck for their particular service, and thus get the best results from their investment; their aim being to obtain the largest amount of productive time per unit of machinery.

Comparison of details is the surest way to obtain satisfaction and this has been abundantly provided for by "Motor Trucks of America." The Goodrich company, Akron, will be glad to send a copy of the second volume, on receipt of a request to that effect on the letter head of the prospective truck buyer.

TRUCK STANDARDS IN CARD FORM.

Sets of cards showing standards of commercial vehicles recommended in 1912 by the National Association of Automobile Manufacturers are being mailed to all manufacturers of commercial vehicles by the National Automobile Chamber of Commerce, successor to the above-named association and to the Automobile Board of Trade. These seven cards, 8 x 10, are arranged for filing or distribution and include warranties, in form approved December 3, 1913, superseding the motor truck warranty recommended by the N. A. A. M., in 1912, which it combines with the standard passenger car warranty adopted in 1910. The tables are accompanied by charts of curves and by half-tone engravings illustrating the new lithographed standard warranty.

The subjects of the cards are as follows:

Standard Warranty, Standard Speed Rating, Standard Body Weight Allowance, Overload Allowance Resolution, Standard Caution Plate, Standard Frame Widths, and Lengths and Standard Demonstration Charges.

To encourage the adoption of these standards, the National Automobile Chamber of Commerce is sending sets of the cards to all companies on its list of active manufacturers of commercial vehicles.

Requests from those makers who have not received cards should be addressed to Secretary, Commercial Vehicle Committee, National Automobile Chamber of Commerce, 7 East Forty-second street, New York City.

PROTECTION FOR THE EAR AGAINST NOISES.

On page 581 of the August, 1913, number of THE INDIA RUBBER WORLD, mention was made of an invention composed of a celluloid tube with rubber discs to prevent impairment of the sense of hearing through shock from gunfire or other loud noises. No adequate illustration of the device being at that time available, and believing that such an illustration might be of interest to our readers, we reproduce herewith a drawing which shows the protector in use. [J. A. R. Elliott, New York.]

THE RUBBER TRADE IN AKRON.

By Our Regular Correspondent.

YOUR correspondent wishes to make a correction. In his last letter, published in the April issue of THE INDIA RUBBER WORLD, he stated that W. E. Slabaugh had been appointed trustee in bankruptcy of the Akron Rubber Mold & Machine Co. This was an error. He should have said that Mr. Slabaugh had been appointed trustee of the Rubber City Machine Co., which is quite another concern. The Akron Rubber Mold & Machine Co. is sound financially and is doing a very large business, both in the United States and Canada. It has recently purchased land adjacent to its present plant, for the erection of a substantial addition, which will increase its ground floor space from 70 x 132 feet to 70 x 232 feet. The plant at the present time is running 24 hours a day.

* * *

The Birmingham Iron Foundry, of Derby, Connecticut, the well known builders of "Birmingham" Rubber Mill Machinery, have purchased the equipment of the Rubber City Machine Co., Cedar street and Broadway, Akron, Ohio, and will operate the plant as a branch. P. E. Welton, favorably known in the rubber trade, has been retained as manager of this branch and will also represent the company's business from the home office in Akron and the Western territory generally.

Automatic mixing aprons, duplex cores and other rubber mill apparatus of the lighter kind will be manufactured here; also general machine jobbing will be done, so far as the shop is available for that purpose. As the company has installed large equipments in the rubber factories in Akron, it is intended to also use the branch as a "service station" where repairs and adjustments may be made at short notice on any of the "Birmingham" product.

* * *

Every man, woman and child—white, black, brown, yellow and red—of the United States, gets an average tire service of Akron-made tires of two miles per month. Every man, woman and child of the world gets an average tire service of Akron-made tires of two miles per year. Akron's tire factories are running two and three shifts, many more tire making machines are humming than ever before, all to take care of the enormous tire demands. Akron's factories turn out more than 25,000 tires per day, more than 600,000 for the month of April. Akron's April tires placed side by side and running at the rate of the fastest automobile would cover every inch of soil in the United States in a month. Akron's April, May and June tires, standing circumference to circumference would reach from New York to Chicago. The canvas used in Akron's rubber factories in one year would place the walls of a tent all around the State of Ohio. If Akron used only plantation rubber it would take almost the world's supply to take care of her rubber trade. Approximately 30,000 persons in and about Akron are directly engaged in Akron's rubber business, and an equal number outside of Akron are engaged in making or raising raw materials that go into Akron's rubber goods. At least 10,000 people, scattered all over the world, are either interested in buying or selling Akron rubber products or products for the Akron rubber factories. Yet we are told that "the rubber industry is in its infancy."

* * *

Notice in the New York papers was recently made of a new process for manufacturing rubber by The B. F. Goodrich Co. The writer inquired of Mr. Shaw concerning the same. Mr. Shaw's answer was "Nothing for publication."

Goodrich Resilient Wireless Tires, description and illustration of which appeared on page 316 of our March issue, have been adopted for use on G. V. Electric trucks by the National Electric Lamp Association in Cleveland, Ohio, to carry Mazda bulbs, and are said to be giving more than the average mileage in this service in addition to effecting a saving in power, it being found necessary to charge the batteries only every other night instead of every night as before these tires were used.

The Akron letter for the April issue of THE INDIA RUBBER WORLD contained mention of the appointment of W. O. Rutherford, whose portrait appears here, to the office of assistant general sales manager of The B. F. Goodrich Co. Mr. Rutherford has a wide acquaintance in the trade, having been manager of

W. O. RUTHERFORD.

the Denver branch of this company and later, for a period of ten years, of the Buffalo branch. For the past four years he has acted as assistant to H. E. Raymond, second vice-president and general sales manager, and this appointment marks another important advance in a career of efficiency.

* * *

The new machinery which the Firestone Tire & Rubber Co. has installed in the additions to its plant recently completed is already running at full capacity, bringing the company's daily output of automobile tires up to 6,000.

The Gramm motor truck sent to St. Petersburg to compete with foreign made motor equipment for use in the war service of that country was equipped with Firestone tires, and as a result of especially severe tests it was purchased by the Russian Government, which has since repeated its orders.

* * *

What is probably a world's record in tire building is reported as having been made on April 6 by the Goodyear Tire & Rubber Co., when the factory output comprised 10,635 tires.

Commencing April 1 this company discontinued its retail business in tires of all kinds, the various branches throughout the country after that date to distribute only in wholesale quantities.

* * *

The Kelly-Springfield Tire Co. is rapidly pushing the construction of four new buildings.

* * *

The Marathon Tire & Rubber Co. has more than doubled its floor space and output during the last twelve months.

* * *

The Betzler & Wilson Fountain Pen Co., of this city, have purchased the complete fountain pen plant formerly operated by O. E. Weidlich, Cincinnati, Ohio, and moved it to Akron, combining it with their present factory.

The Betzler & Wilson concern has been in business for the past

twenty-two years and manufactures a full line of fountain pens—ordinary, non-leakable and self-filling—and has recently also increased its capital and expects to advertise and push the line stronger than heretofore.

* * *

H. A. Hine, secretary and treasurer of the Star Rubber Co., of Akron, died March 28, as a result of an operation the day before for appendicitis. Mr. Hine was born in Ohio in 1864, and in 1890 became a resident of Akron. He first intended to enter the profession of law, but he soon left his legal studies to become a bookkeeper in the Star Drilling Machine Co., with which organization he was associated for twenty-three years, for the last fourteen years being its secretary and treasurer. He was also connected with a number of other Akron enterprises and was prominent as a Mason and in other similar social organizations. His wife and two daughters, of 14 and 12, survive him.

* * *

The various officials and owners of the Akron rubber companies have taken a live interest in the raising of funds for a new hospital for the city of Akron, which will probably be located in the south end of the city, not far from several large rubber plants. The Kelly-Springfield Tire Co. has subscribed the sum of $5,000 toward this enterprise, the first payment of $500 to be made at the time work is started on the building, and an equal amount on the same date each year thereafter for a period of ten years; and a subscription of $6,300 has been made by executive heads of the Firestone company.

* * *

The Mohawk Rubber Co. has changed its New York offices from 1864 Broadway to 123 West Sixty-eighth street, the quarters formerly occupied by the Century store, thus securing a much larger floor space.

* * *

A number of men who for some time past have been prominent in the rubber industry of this city have become identified with the interests of the Norwalk Tire & Rubber Co., of Connecticut, mention of whom and of the incorporation and plans of the new company is made on another page of this issue.

The Firestone Tire & Rubber Co. has appointed J. Jordan office manager of its New York branch, succeeding J. S. Ridley, who assumes the management of the new branch at Newark, New Jersey. Mr. Jordan is well acquainted with the New York tire trade, having been in this field for the past nine years, first as assistant office manager of a large rubber company and of late with the Century Tire Co.

R. M. Merriman has associated himself with The Columbia Rubber Co., of Columbiana County, Ohio.

J. W. Miller, secretary, treasurer and superintendent of the Star Drilling Machine Co., has been elected secretary and treasurer of the Star Rubber Co., to succeed Homer A. Hine, lately deceased.

Emil Gammeter, of the Electric Reclaiming Co. and the Gammeter-Brodbeck Sales Agency, has just completed an extensive trip through Europe in the interests of these two companies.

T. S. Barbour has become associated with the sales department of the Firestone Tire & Rubber Co. at its branch in Omaha, Nebraska.

E. D. Whorley has been appointed general manager of the American Tire & Rubber Co.

R. M. Pillmore, president of the Mohawk Rubber Co., who has spent the winter in California advancing the interests of that company, is expected in Akron next week.

John Johnson has been appointed general manager of the Electric Rubber Reclaiming Co. plant.

THE RUBBER TRADE IN BOSTON.

By Our Regular Correspondent.

THE rubber trade is spotty. Some lines are having good business, others are slow. And some houses in similar lines report dissimilar conditions. However, in the main, most people are seasonably busy. The tire men are plugging along, some reporting good business, others not, but all willing to produce stock goods in anticipation of heavy demand later.

The rubber footwear business is over for the season, as far as the consumer is concerned. This is about the time when formerly salesmen were taking good orders under the old system of discount for early business, but now that no such inducement is held out, salesmen find it difficult to interest customers. Therefore jobbers are hanging back, and the mills are running to very small tickets, and mainly on floor goods and tennis shoes. The rubber clothing men are fully as busy as usual at this season. The druggist sundry people are having a normal trade. There is a moderate call for mechanicals. Those factories where rubber heels and soles are made are doing a rushing business with orders ahead.

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This tendency to use rubber as a substitute for leather in the shoe industry is shown in the formation of another company to manufacture a shoe sole by combining leather scrap, finely shredded, with rubber. The C. & S. Co. is a new corporation with a capital stock of $50,000, which is building a new machine to manufacture such soles. The officers are prominent men in Brockton, the leading shoe center of Massachusetts for men's shoe manufacture. Harvey F. Crawford is the president, and the other officers are Herbert F. Bryant, vice-president; Francis E. Shaw, treasurer; and Ernest L. Shaw, clerk; and these, with E. M. Low, are the directors.

Another Brockton enterprise, though it may not yet be beyond the experimental stage, is the making of soles of a combination of duck fabric and rubber, several alternate layers of each being compressed and vulcanized, forming a sole which is said to be much more flexible than leather, and to give far longer wear.

Speaking of the latter fact, probably few are aware of the extent to which rubber is taking the place of sole leather. There is an economic side to this. Sole leather is higher in price today than ever before in the history of the shoe trade. Cattle are diminishing in number, hides are scarcer and as a consequence the shoe manufacturers are welcoming any material which can be properly and economically substituted. Rubber soles have been used for years on certain lines of sporting and outing shoes, but within the last two years their use has increased enormously, and such soles have been made to the number of millions of pairs. A Brockton shoe manufacturer has succeeded in making a strong, sensible, handsome shoe without a single particle of leather in it, but this was more as a curiosity than a business proposition, though a Chicago house has already asked for samples and prices. In this connection the manufacturer claimed to be the first user of rubber for a welt, but this is disputed by the makers of leather-soled rubber boots, which have a rubber welt to which the leather sole is attached.

* * *

The news of the death of John H. Forsyth came as a distinct shock to his many friends. Although he had not been in active business for some time, he still kept in touch with affairs and was seemingly in fairly good shape. He was much interested in the erection of the Forsyth Dental Infirmary, now nearing completion, which is a gift to the needy of this city, he with his brother, Thomas A. Forsyth, being the donors, having erected it as a memorial to two brothers, James Bennett Forsyth and George Henry Forsyth. He had hoped to see this novel benefaction completed and turned over to the trustees for the purpose intended. The funeral was attended by many friends. During the services work was stopped at the Infirmary building, and also

at the factory of the Boston Belting Co., of which he was for years the superintendent.

* * *

Thomas A. Forsyth, of the Boston Belting Co., has been offered the office of Overseer of the Poor of the City of Boston, by Mayor Curley. Mr. Forsyth is a man of keen business ability, and his charitable disposition is evinced by the building of the great dental infirmary, mentioned above. I have not yet heard that Mr. Forsyth has accepted this important office, but its tender to him cannot but be considered an honor to him and an excellent choice by the Mayor.

* * *

If the price of scrap rubber declines on account of an oversupply, the girls of Wellesley College may be blamed for it. This world-renowned college sustained a tremendous loss when its principal dormitory and recitation building was totally destroyed by fire last month. Extraordinary efforts are being made to raise money for a series of buildings to replace College Hall, and one of the schemes, started by Miss Mary Knapp, of Pittsburgh, Pa., is the collection of scrap rubber. Every girl in the college has been asked to save her cast-off rubbers, and to have her eyes open to the state of her friends' overshoes. It is expected that the girls will appeal to the students of the men's colleges to aid them in this campaign, and thus will be gathered a large amount of scrap rubber. The girls will also examine the tires of all automobiles in which they are invited to ride, and will also be on the lookout for all the leaky hose which may be discovered when the spring gardening season starts. The result is expected to be a large collection of scrap rubber which, even at present low market rates, will add a goodly sum to the building fund of the college.

* * *

Boston is likely to have a new rubber footwear centre if the present development continues. Boston is somewhat notional as regards its business section, and to say that a firm has moved to South Boston means to a citizen that it has gone into the suburbs. This, however, is not necessarily the case, for the three houses which have recently moved from Congress street and from Atlantic avenue are certainly no farther, and possibly not as far, from the big South Terminal Station as they were before. The three concerns are all in the same block, two in adjoining stores and the other but a few doors from them.

The Pilgrim Shoe and Rubber Co., which is a jobbing outlet for the Hood Rubber Co.'s goods in parts of New England, is to occupy the store, 274 and 276 Summer street, or, as it is sometimes called, Summer Street Extension. It is a five-story building, with elevators and specially convenient shipping facilities.

At 278 Summer street a similar building is being furnished and equipped for the occupancy of the Congress Shoe and Rubber Co., which sells at wholesale the Shawmut rubbers, also made by the Hood Rubber Co., and whose territory includes all of New England and part of New York for this line. The two houses naturally are closely connected, though one caters more to the city trade and the other to the smaller dealers. They cannot be considered competitors, and, in fact, the offices, which adjoin each other, are connected by doors leading from one to the other. However, the two organizations have separate officers, Julius Weber being president and treasurer, and W. S. Cruickshank general manager of the Pilgrim Shoe and Rubber Co.; and Marshall Cutting being treasurer and general manager of the Congress Shoe and Rubber Co. William A. Moody, until recently president of the latter company, has resigned, and at present writing his successor has not been appointed.

W. F. Mayo & Co., wholesalers in rubber footwear, are at 286-290 Summer street, where they occupy the big six-story and basement building, which is exceptionally well fitted for their extensive business. For more than a quarter century they were on Congress street, and the change to a new modern, mill-construction building is a great improvement in the comfort of all the officers and workmen, and tends greatly to added efficiency in the conduct of the business.

* * *

William H. Porter, who has been chosen president, treasurer and general manager of the Enterprise Rubber Co., assumed these positions the first of last month, and Mr. Proctor, his predecessor, has gone to New York, where he assumes important duties with the United States Rubber Co. Mr. Porter comes here from Pittsburgh, where for four years he had managed the Pittsburgh Rubber Co. business; but he is an old Bostonian, having been for fifteen years previous with the old firm of Edmands & Mayo and its successors, W. F. Mayo & Co., with whom he occupied various positions in the store and on the road. He is pleased to get back to Boston, and his old friends and neighbors are glad to welcome him here.

* * *

The steamer which took the Boston Opera company to Europe also carried as passengers Mr. Clarence L. Weaver, president and manager of the Banigan Rubber Co., of this city, and Mrs. Weaver, who are now on a vacation tour of Great Britain and the Continent.

* * *

That was quite a shipment of tires which arrived last month from the B. F. Goodrich Co., of Akron, for its New England agency. Twenty-five carloads means a good many tires, but Manager F. T. Moore believes the stock is none too large to satisfy the demands of automobilists served from this Boston branch of the house.

* * *

The Stoughton Rubber Co., at whose plant in Stoughton, Massachusetts, about 500 persons are employed, is erecting another addition, two small buildings having been moved to make room for the new structure, which will be 50 feet in length and three stories high. The completion of this addition will make it possible for the work of production to proceed from start to finish without covering any of the ground twice.

E. H. Hicks, vice-president of this company, will sail on the 12th of May for a trip through the British Isles and Germany (with perhaps a few days in "Gay Paree") on business connected with the company.

* * *

M. A. Turner, of the Monatiquot Rubber Works Co., of South Braintree, has just returned from a fishing trip in Maine. He reports that there are still enough fish remaining to supply all the other members of the rubber trade.

THE RUBBER TRADE IN CHICAGO.

By Our Regular Correspondent.

THE arrival of spring has, of course, materially stimulated the sale of garden hose, and dealers in this particular article are at present quite cheerful. The footwear dealers are much less inclined to complain than during the fall and early winter. The snows of February and March and the rains of April have made a notable decrease in the stock of rubber boots and shoes carried on their shelves.

The belting people are also comfortably busy, especially those supplying the elevators in the northwest. Clothing dealers are as a rule not altogether cheerful, their business hardly being up to normal.

* * *

George F. Hawkinson, of the Peerless Rubber Manufacturing Co., gave your correspondent some interesting information regarding a feature recently introduced by his company for the increase of the efficiency of the selling staff. He said:

"Through your columns I should like to call the attention

of the rubber trade to a plan which has worked out most successfully with us, and which I believe could be tried by other concerns with equally gratifying results. Last February a meeting of all the salesmen, both in the city and on the road, who represented our company, was held at the Hotel La Salle. This meeting was so successful that it was decided at that time to repeat it quarterly. We are now preparing for our May meeting, which promises to be an even greater success than the former one. The plan of these meetings is not merely to get together and eat in a social manner, altho that is one of the most pleasant features. The purpose is for a general discussion of the many problems which beset the rubber salesman in his daily work. The individual experiences of each member can be told, and advice and suggestions offered by the others which could be secured in no other manner. Best of all, however, is the opportunity which is given for mutual encouragement among the salesmen. The social feature is important, but it is subordinate to the business purpose. We have every intention of continuing these meetings, as they are without question productive of much good, for the salesmen as well as for the firm."

* * *

One of the most seasonable articles of footwear in the Chicago market is the tango slipper. This was introduced a short time after it was seen that the tango was slated for popular favor. Thousands of pairs have been sold in the city during the winter. Few dances are held where the tango does not rule, and many are given where no other dance is danced during the entire course of the evening.

* * *

The Chicago branch of the Motz Tire & Rubber Co., of Akron, has moved from its former location, 2023 Michigan avenue, to its new quarters at 115 East Thirtieth street. This change was necessitated by the rapid expansion of the Chicago organization, which had entirely out-grown its former facilities.

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Mr. Ryerson, vice-president of the W. D. Allen Manufacturing Co., is now on a visit in the East, in the interest of the company. He reports business booming, especially in the fire hose rack equipment for interior protection.

* * *

George McChesney Syther, manager of the service department of the United States Rubber Co. in this city, died on March 30 of heart trouble, at the age of thirty-four years. Mr. Syther came to Chicago from Akron, where he was employed by the Goodrich company. He is survived by his wife and two small children. His body was taken to Akron for interment.

USING CANDY MOLDS OF RUBBER.

By Our Cincinnati Correspondent.

DOWN at the Woodward High School, in Cincinnati (ex-President Taft's *alma mater,* by the way), an inventive teacher in domestic science has contrived an interesting device for candy-making, which, being non-patented, lends itself to imitation elsewhere.

While the course of domestic science is, of course, intended to help the young women of the Queen City to become better able to wash and iron and cook and bake, still it is recalled that husbands and children relish a tid-bit now and then. As a result candy-making has become a feature of this course and the young women make caramels and marshmallows and taffy and what not.

Candy is candy the world over, of course, but appearances count a great deal. To pile up a lot of lumps of sweets would not always serve to tempt the palate of the fastidious. Wherefore good confectioners make models of metal, which, in turn, are pressed into flat beds of cornstarch or flour, making molds for the candy itself. Into these molds the melted sugar is poured and left to cool. Often, however, in pressing these metal shapes into the cornstarch or flour one mold will disturb another, so that the whole work has to be done over again. But this would not be the case with a rubber mold that would always keep its shape and not be so liable to accidents as the unstable starch or the shifting flour.

SCHOOL GIRLS MAKING CANDY IN RUBBER MOLDS.

So the teacher got busy. She designed some eighty different forms in which candies would look well. These, then, she arranged in series, eight rows across by ten rows down. She took her pattern to a great rubber factory and had a mat of rubber embodying this series of forms made for her use.

And now candy-making is indeed simple. You pour your syrup into the neat rubber molds, let it cool and by and by draw it out; and a slight washing, with luke warm water, makes the mold ready for another batch of the sweets.

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

SOME of the rubber factories in this vicinity are booming, altho others report a slight falling off in the volume of business as compared with a month ago. Those concerns that are making automobile tires and automobile accessories of all kinds have enough orders on hand, it is reported, to keep them running full time for the remainder of the summer and well into the fall. The factories engaged in the manufacture of footwear, excepting such departments as are producing tennis and summer wear shoes, are not especially rushed at present.

* * *

With the idea of electrifying the entire plant and practically doubling the floor space, the Phillips Insulated Wire Co., of Pawtucket, is having specifications and plans completed for a three-story and basement brick building, 300 feet long and 210 feet wide, with power house, to be erected on Freeman street and Mendon avenue, directly opposite the present plant. In anticipation of the change a number of small buildings at present located on the site are being removed and a large, new storehouse is in course of construction.

The latter building will be used as a general storehouse and will be of brick, 200 feet long and 80 feet wide, being a great improvement over the former buildings used for the purpose. The factory at present is being operated by steam power, but when the new power house is completed the entire plant will be operated by electricity, plans having been made for the installa-

tion of eight 300 h. p. boilers and two 1,000 k. w. General Electric motors.

The main structure of the new plant will be triangular shaped, 300 feet long and 210 feet wide at the north end and tapering down to about 60 feet at the south side. The boiler house will occupy the space between the main building and the junction of Freeman street and Mendon avenue. About 400 hands are employed by the concern at the present time, but when the addition is completed it is expected about 200 more will be required.

* * *

The manufacture of tennis shoes by the National India Rubber Co. is rapidly increasing, and prospects point to a busy time for a number of weeks to come. The rush is such at this factory that Assistant Superintendent James W. Franklin has posted a call for additional help in the stitching room, where the tops are made.

A baseball team has been organized by the employes of this company, under the management of C. E. Ostby.

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A new smokestack, 7 feet 10 inches in diameter and 150 feet high, is being erected at the plant of the Revere Rubber Co., on Valley street. It is to be of steel and will take care of two new boilers that are being installed at the plant. The mechanical force of the concern is doing the greater part of the work of erection.

The Revere company is rushed with work and is hiring additional help. At present the factory is turning out 1,000 tires per day, and 2,500 inner tubes. About 1,500 casings will also be turned out soon, according to the statement of the management.

Arthur Carr, superintendent of the company's rubber thread department, recently sailed for Europe. He intends to combine business with pleasure, and during his absence will make a thorough investigation of business conditions in the thread line for the company in England, Germany, Spain and Russia.

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The foremen and heads of the departments at the American Electrical Works and Washburn Wire Co., at Phillipsdale, have been organized during the past month for the purpose of promoting efficiency in the two plants, and of giving the men an opportunity to meet and talk over matters concerning the business. The first meeting was held early the past month, and while the two plants are controlled by the same interests the meetings are held separately. Superintendent Herbert Bessom of the Electrical works presided at one gathering and Superintendent Thomas Wray of the Washburn company at the other. It is planned to hold meetings every Saturday, and each week some timely topic will be taken up for discussion, and social features will be introduced.

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The Polack Tyre & Rubber Co. has opened an office at 17 Exchange street, with D. C. Fowler as district manager.

THE RUBBER TRADE IN TRENTON.

By Our Regular Correspondent.

ONE of the most notable recent occurrences in Trenton was the "Pullen" demonstration on April 4, when the municipal authorities, the business men of the city, the automobile club and others united in a celebration to mark the victory of Edwin Pullen and the Mercer car in the prize race at Santa Monica. Trenton, which has been first in the production of many articles of commerce, is the home of the Mercer car, the first American car to win in a race of this kind. The demonstration took the form of an automobile parade, which included touring cars, runabouts, commercial trucks and motorcycles; suitable prizes—among which were automobile tires—being awarded for the best decorations. The parade ended at city hall, where Pullen and Andrew Vollman, mechanician of the winning car, were received by the Mayor and presented with gold watches of Trenton make, gifts of the Citizens Committee of Trenton, and appropriately inscribed.

* * *

The factories of this state have had a particularly busy year. Of the 2,556 establishments in the state reported on by the State Bureau of Statistics, six declined to report as to capital. The working capital for the industries included in the report amounted to $919,000,000. The largest amount invested in any one industry is given as $74,000,000, in oils; while $31,000,000 is invested in the rubber industry and $43,000,000 in chemicals. The selling value of rubber products for the year 1913 is given as $38,500,000, of chemicals $44,800,000 and of wire $41,000,000. The industries of the state as a whole were operated to 74 per cent. of their capacity, as against 73 per cent. for the previous year.

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New Jersey will be the first of the states to complete its portion of the proposed Lincoln Highway, and a bill now in the hands of the Highway Committee of the Assembly provides for the making of the route at the expense of the state. The route, which passes through Princeton, will enter Trenton at the Battle Monument.

* * *

A company was incorporated in this state on April 15 with an authorized capital stock of $125,000, under the name of the Atlantic Aerial Navigation Co., which has as its object the designing, building, sale, repair, operation, etc., of aeronautical, automobile and electrical accessories and appliances, with devices of every kind and description therefor as well as all supplies, materials and other paraphernalia as are used or are capable of being used in their construction and operation. It is said that this company intends to operate an airship line of dirigible balloons and airships between the cities of the United States and foreign countries for the transportation of passengers, freight and express. The incorporators are Kenneth and Donald Robertson and James McCutcheon, all of 203 Federal street, Camden.

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The Fisk & Dunham Rubber Co., recently organized, with offices at 310 American Mechanic Building, is putting out a new style of inner tube, which, it is claimed, will stand up under the most exhaustive tests. It is a tube in which a specially prepared canvas is used and which, while heavier than the ordinary tube, is said to have abundance of life and not to deaden the tire. It is the invention of Clark F. Fisk, a member of the company. This company is now represented in the principal cities of the East, the expectation being to extend representation throughout the West as soon as the Eastern trade is well established.

* * *

The tire product of the Ajax-Grieb Rubber Co., of this city, is distributed locally and in Mercer county through the DeBlois Tire & Rubber Co., of which Ulric DeBlois is general manager. Mr. DeBlois is thoroughly familiar with the merits of this tire, having been for eight years tire inspector for the Ajax company.

* * *

A noteworthy instance of quick development is shown by the Cut Price Auto Tire Co., located at 112 East Hanover street. This concern, started in June, 1912, with a stock of 30 tires, has grown rapidly, its sales now embracing tires and accessories of all kinds, in a territory extending for twenty-five miles, within which distance deliveries are made, an automobile delivery service having recently been installed to assist in the further promotion of trade.

* * *

William R. Thropp & Sons, manufacturers of rubber mill machinery, have installed in their machine plant on East State street the largest roller grinding machine in the state. This machine weighs 20 tons, is 42 feet long, 12 feet wide and 5 feet

6 inches high, is capable of grinding a roll 24 inches in diameter and 144 inches long, and is driven by an attached electric motor. It is said that the accuracy of this machine is invaluable to owners of rubber mills, as it will grind out a roll that will not vary more than one-fifth of a thousandth part of an inch. This company employs 165 men and is working overtime.

* * *

The Luzerne Rubber Co., the productive capacity of whose plant here has for some time past been considerably over-taxed, is soon to erect a factory addition. This new building will be 80 x 40 feet, two stories high, and will be used as an addition to the mill and store rooms, increasing the capacity of the former to double its present output.

* * *

The up-keep contest started about a year ago by the Ajax-Grieb Rubber Co., of this city, has just been closed and prizes awarded to the successful competitors—208 in number—among whom $5,000 has been divided, in amounts ranging from $500 downward. Blanks provided by the company at the time the offer was made were used for reporting the size of the tire, the make of car on which it was to be used, the date of purchase, the speedometer reading and where the tire was purchased—this card being signed by the employer of the chauffeur and the information copied on cards at the place where the tire was bought. It was also required that notification be made when the tire had ceased its usefulness, the date when it was removed from the car, the speedometer reading and the number of miles covered by the car—this card also to be signed by the owner and returned within five days after the tire was taken out of service. Some remarkable tire mileages were obtained in this competition, the largest—16,782 miles—having been secured by C. E. Rock, driver for J. F. Gibney, Marlboro, Massachusetts, operating a Locomobile. This is the first time that such a contest has been tried by any tire concern, and the competition as viewed by the makers of Ajax tires shows that while service and long wear are built into every casing, it is care and attention to the tires that bring out the mileage, and abuse and neglect that spoil the chances of realizing the maximum. Another contest of a similar nature is soon to be opened.

* * *

The Olden Rubber Manufacturing Co., of 680 Olden avenue, this city, is erecting a new plant on the site of the one destroyed by fire on January 26. This company manufactures molded rubber goods, matting, automobile accessories, plumbers' supplies, etc., an increased production of which will be made possible by the present building operations. The factory will be of brick, steel construction, on a plot 160 x 102 feet, the main mill room covering an area of 125 x 102 feet and having but seven pillars in this entire space. A large quantity of new machinery has been purchased, and the prospects are that this will be in full operation by June 1. D. M. Lovett, manager, states that sufficient business is in prospect to keep the plant running full time, and that there is every indication of satisfactory and successful operation the same as before the fire.

* * *

The Semple Rubber Co., recently formed in this city, with a capital stock of $125,000, has taken the plant on Murray street formerly occupied by the American Porcelain Works, which it is equipping for the production of inner tubes for automobile tires, to the extent of 600 tubes daily, the expectation being to extend the line of manufacture a little later to include outer cases and other lines of a kindred nature. This plant is on the Belvidere division of the Pennsylvania Railroad, and will soon be ready for occupation. Charles H. Semple, at one time president of the G. & J. Tire Co., of Indianapolis, and who about two years ago retired from the presidency of the Empire Tire Co., of this city, is president of the new concern; F. A. Drake is treasurer, and R. H. Laporte is secretary.

THE RUBBER TRADE ON THE PACIFIC COAST.

By Our Regular Correspondent.

THE Employers' Liability law recently enacted in California, if enforced in accordance with the original intention, will probably add slightly to the cost of production in this state. The general recourse of employers in their efforts to evade this law has thus far been to deduct the cost of the insurance from the wages of their employes—a practice declared by the State Industrial Commission to be entirely contrary to the spirit of the Compensation Act, if not to the letter of the law, which especially specifies that any agreement between employers and employes for the payment of sick, accident or death benefits must be "in addition to the compensation provided for by this act." The commission also points out that by carrying the amount of the premium into the cost of production the burden is borne by the consumers, who are chiefly employes, and that if they are also assessed directly, in reduction of wages, they are doubly taxed. The theory of compensation is to transfer the burden from the injured to the industry, which cannot be accomplished if employers are permitted to assess the employed, some particularly unscrupulous ones even going to the extent of assessing their workers beyond the total amount of insurance.

* * *

The Diamond Rubber Co. has appointed W. J. Voit, former manager of its Los Angeles branch, to the position of Pacific Coast manager recently vacated by C. E. Mathewson. Mr. Voit, whose headquarters will be at San Francisco, has been in charge of various branches for this company and has traveled up and down the coast for years, so that he needs no introduction to the tire trade of the West.

* * *

It is announced that the Taxicab Co. of California, the largest concern of this kind in San Francisco, has adopted "Nobby Tread" tires for use on all its cars and hereafter will use no other make. A similar decision was some time ago reached by the principal taxicab company in Stockholm, Sweden, whose purchases of these tires for 1913 reached a total of $34,000.

* * *

Plans are under way for the construction of a highway between San Francisco and Los Angeles, which will cost $2,000,000, and which is to be completed and ready for use in time for the Exposition next year. Meetings have been held by the San Francisco Chamber of Commerce, representatives of Los Angeles and counties through which the road will pass, the Exposition company, the State Automobile Association, etc.; and a plan has been prepared by which $2,000,000 is to be set aside in State Highway bonds, to be taken by the interested communities, Los Angeles to take $1,300,000, and a bonus of $75,000, required for the sale of the issue, to be raised in equal parts by the counties interested.

* * *

The Batavia Rubber Co., of Batavia, New York, is now being represented in southern California by the Pasadena Rubber Supply Co., at Pasadena, and the Long Beach Motor Supply Co., at long Beach; while L. A. Irish has been employed to cover the sections north and southeast of Los Angeles, as far as San Francisco and into Arizona, with his headquarters at 332 West Pico street, Los Angeles.

* * *

It seems scarcely credible, at first glance, that a few innocent toy balloons should tie up street traffic, cause men and boys to climb telegraph poles, and collect a more or less riotous mob of from 10,000 to 20,000 persons; but this is just what happened recently in Los Angeles, when George T. Cline, a sporting goods dealer, opened a store in that city and made use of toy balloons as a means for distributing a particular form of advertising matter. Mr. Cline had released from the second story window of his new store at Sixth and Spring streets 1,000 balloons,

attached to each of which was an order entitling the possessor, when presented at the store, to some article sold by the company—these prizes ranging all the way from a baseball to a bicycle. Under the circumstances it is not surprising that immense crowds came together. While rather an expensive form of advertising, this idea as carried out is said to have been very effective and to have established the popularity of the new store not only with those who captured balloons and prizes, but also with their less successful competitors.

* * *

At the retail store of the Hendrie Rubber Co., on Pico street, Los Angeles, a tire accessory department has been installed, in charge of Duke Ainslie, a veteran rubber man, where a complete line of tire and rubber repair supplies will be carried for distribution in that vicinity and in Arizona. This company, whose factory at Torrance, California, was formally opened on August 16 last, has already established branches in San Francisco, Denver, Salt Lake and Colorado Springs.

* * *

The Savage Tire Co., of San Diego, has closed a contract with J. C. O'Gorman, of Portland, giving him the exclusive agency for Savage tires in Oregon. Mr. O'Gorman is president of the O'Gorman Rim Co., of Portland, a large automobile supply and accessory concern, which has carried Savage tires for several months, and the success he has met with in their distribution among local users has been very gratifying.

* * *

The competition for a cup awarded annually by the United States Tire Co. to the branch which makes the largest net gain in sales pro rata during the year has been awarded this year to the Portland, Oregon, branch, of which C. H. Mayer is manager.

STANDARD HOSE COUPLING.

The history of fire-fighting in this country is intimately connected with the development of hose couplings. Tracing the subject back for more than forty years, it will be found that the unquestionable importance of a national standard hose coupling was clearly demonstrated by the great conflagration at Boston of December 9 and 10, 1872. On that occasion the differences in thread prevented most of the thirty neighboring cities from assisting in extinguishing the fire through their inability to connect with the hydrants or engines. In consequence a number of these surrounding cities, taking to heart the lesson taught by the big fire, adopted the coupling used in Boston and known as the Roxbury coupling, which now practically forms the national standard.

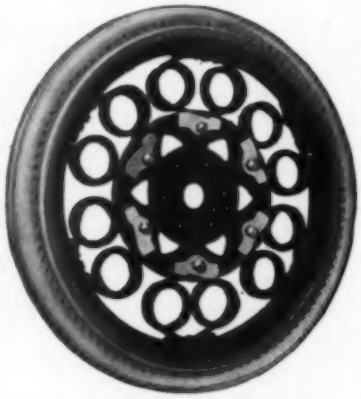
Chief John S. Damrell, who had been at the head of the Boston fire department at the time of the conflagration, became a zealous advocate of the standard coupling, particularly at the conventions of fire engineers held at Baltimore in 1873 and St. Louis in 1874. A special committee appointed at New York in 1875 made a recommendation of eight threads to the inch at Philadelphia in 1876, which was found impracticable and was followed by another from a new committee appointed at Cleveland in 1876.

This committee recommended at the Washington convention of 1879 a coupling with six threads to the inch, which standard was unanimously adopted as ensuring freedom from clogging. This action was confirmed by a resolution adopted at Boston in 1880, and the next step was the report presented at Springfield, Massachusetts, in 1891 by ex-Chief Landy of Elmira, New York, recommending a change from six threads to 7½ threads. At the Chattanooga convention of 1904 still another committee was appointed, which reported at Duluth in 1905 for six threads; its opinion being, however, finally overruled by the convention in favor of the Landy 7½ threads coupling. This has since been the standard coupling of all fire departments and water works associations through the country. It is practically the Roxbury coupling as used in Boston in 1872 and has been adopted by several hundred cities and towns of the United States and Canada. The Roxbury standard is one of the oldest in existence.

Much of the credit for the introduction of the standard hose coupling is due to F. M. Griswold, chairman of the committee on standard hose threads of the National Fire Protection Association.

A WHEEL WHOSE SPOKES ARE SPRINGS.

The rubber heel men are always eulogizing their goods on the ground that they "take the jar off the spine." Now that is exactly what the people busy on the invention of wheels and tires for motor vehicles are trying to do, get something that will take the jar off the motor's spine—that is, keep its machinery from vibration, and thus insure it long life and durability. The manufacturers of the South Bend Wheel, which is illustrated here, claim that they have succeeded in this undertaking, that their wheel—which substitutes coiled springs for straight spokes—when equipped with a cushion tire, minimizes vibration, relieves the jar, greatly increases the life of the mechanism in the car and the service of the tires. This wheel can be applied to the hub of any make of car with very little mechanical difficulty. (South Bend Spring Wheel Co., South Bend, Indiana.)



South Bend Spring Wheel.

INDIA RUBBER GOODS IN COMMERCE.

EXPORTS FROM THE UNITED STATES.

OFFICIAL statement of values of exports of manufactures of india rubber and gutta percha for the month of January, 1914, and for the first seven months of five fiscal years, beginning July.

Months.	Belting, Packing and Hose.	Boots and Shoes.	All Other Rubber.	Total.
January, 1914.....	$175,268	$57,244	$463,778	$696,290
July-December, 1913..	1,254,589	697,823	3,842,106	5,794,518
Total, 1913-14.....	$1,429,857	$755,067	$4,305,884	$6,490,808
Total, 1912-13.....	1,583,069	973,423	4,695,696	7,252,188
Total, 1911-12.....	1,297,422	1,076,492	3,987,743	6,361,657
Total, 1910-11.....	1,215,134	1,600,041	3,397,718	6,212,893
Total, 1909-10.....	1,096,459	1,371,199	2,739,953	5,207,611

The above heading, "All Other Rubber," for the month of January, 1914, and for the seven months of three fiscal years, beginning July 1, includes the following details relating to tires:

Months.	For Automobiles.	All Other.	Total.
January, 1914.....	$137,889	$35,891	$173,780
July-December, 1913.....	1,744,792	303,499	2,048,291
Total, 1913-14.....	$1,882,681	$339,390	$2,222,071
Total, 1912-13.....	2,050,843	366,761	2,417,604
Total, 1911-12.....	1,374,337	291,460	1,665,797

The Development and Design of a Machine for Producing Plantation Rubber by the Brazilian Smoking Method.

By H. W. Farwell, A.B., and M. H. Korn, C.E.

WHEN in the summer of 1910 Mr. E. A. Korn, the crude rubber importer and merchant of New York, made his tour of the rubber producing countries of the Far East he was greatly impressed by the uneconomic and inefficient methods employed on the plantation in the production of crude rubber from rubber latex.

Having visited Brazil several times before taking his trip east he was naturally well acquainted with the careful coagulating and curing methods in use there, so the difference between the two methods of coagulation was brought home to him most forcefully, and it was easy for him to explain the evident reasons for the difference in quality of the resulting rubber. It is of course well known that the market value of best plantation fine is about 10 cents per pound lower than that of Brazilian Upriver Fine, but that this self-depreciation is entirely unnecessary and can be avoided is not so generally known to the plantation owners.

Mr. Korn in an interview with the "Ceylon Observer" stated at the time of his stay in Ceylon that if plantation latex were smoke-coagulated and cured like Brazilian, the resulting rubber would be equal in quality and market value to Brazilian Fine from the Tapajoz region. His views were seriously disputed by a few whose actual experience and knowledge of the subject really did not entitle them to assume the role of critics. It is quite clear to those who are capable of logical reasoning that if certain treatment is applied to a certain organic substance with a certain resulting reaction, the same treatment applied to the same organic substance, in another part of the world, will cause the same reaction—and a like product will result in both cases. This argument covers the case exactly and completely, for the two latices come from the same species of trees—*Hevea Brasiliensis*. There are, of course, some differences in soil and climatic conditions as well as in the age of the trees, but they do not seem to have any appreciable effect either way on the quality of the latex tapped in the East.

It must therefore be admitted that the rubber producers of the East are at the present time incurring a large loss in possible returns, a loss which in fact amounts to approximately $20,000,000 annually, because the inferior and inefficient methods of coagulation decrease the value of the resulting rubber to that extent.

It is the purpose of this article first to show the truth of the existence of this actual loss of $20,000,000 per year to the planters; secondly, to show how this immense loss may be practically eliminated by the use of proper coagulation and curing methods, and, thirdly, how these methods can be effectively employed on the rubber plantations of the East.

We shall assume in our computations that the quality of Eastern rubber cannot quite be brought up to the finest Brazilian Upriver Fine—even by proper coagulation. This assumption is made simply to be on the conservative side of our estimate. It is to be expected, of course, that the latices are a little different in chemical composition, first because the soils are somewhat different, the soil in Brazil being alluvial while that in the East is mostly primary formation (laterite). Secondly, most of the trees in the East are younger than those tapped in Brazil, and the latex from young trees contains slightly more resin, which tends to weaken rubber. It must further be remembered that the Eastern trees are all seeded from the *Hevea* of the Tapajoz region in Brazil.

We shall therefore draw our comparison between Tapajoz Fine rubber and plantation smoked sheet, based upon market conditions existing in New York at the beginning of March, 1914.

Market price of Tapajoz Fine, per lb.	72 cents
Market price of plantation ribbed smoked sheet, per lb.	61 cents
Actual loss in returns to planters, per lb.	11 cents
Loss in weight in washing Tapajoz Fine	20 per cent.
Loss in weight in washing plantation smoked sheet	3 per cent.
Value of Tapajoz Fine to the manufacturer after washing, per lb.	86 cents
Value of plantation smoked sheet to the manufacturer after washing, per lb.	63 cents
Excess value of Tapajoz over plantation ready for working, per lb.	23 cents

This at the present rate of production of about 50,000 tons per year means an approximate loss of:

$$\frac{50{,}000 \times 2{,}000 \times 20 \text{ cents}}{100} \text{ (taken conservatively)} = \$20{,}000{,}000$$

to the plantations taking part in this enormous production.

Having proven the rather startling fact that this article of immense commercial utility is being produced to the extent of 50,000 tons per year at an actual monetary deficiency in legitimate and possible returns of approximately 20 cents per pound, we shall now show:

(1) That the inferior quality of Ceylon Rubber is due to improper coagulation methods.

(2) That the Brazilian process of coagulation, if applied to Eastern latex, will produce rubber in every essential of quality like Brazilian Fine rubber, and will add $20,000,000 to the annual returns of the plantations in the East.

(3) That the Brazilian process of coagulation can be applied to Eastern conditions of production if it is made mechanical.

Regarding our first contention, namely, that the inferior quality of Eastern rubber is caused by improper coagulation methods: It is generally known that the methods employed on the Eastern plantations at the present time merely result in a more or less complete coagulation (without curing) of the latex; i. e., they simply draw together the rubber particles in the latex, with their consequent more or less complete separation from the water content, which often runs as high as 65 to 70 per cent. None of the processes effect the counteraction of the proteins which later cause putrefaction of the rubber and a conversion (within a comparatively short time) of the good rubber into a sticky, lifeless substance. It is equally well known, at least among manufacturers of rubber goods, that any rubber coagulated in this way lacks in resiliency; it is "short," and does not possess the long life of good Brazilian rubber.

It is for these reasons that plantation rubber, although produced from the same species of trees as Brazilian, has been lower in actual value than Brazilian grades.

If in contrast to the above we will now study the Brazilian methods of coagulation we cannot help but feel that it will result in a far superior grade of rubber. The latex there is coagulated and cured in layers no thicker than 0.01 of an inch (0.25 of a millimeter) by the chemical and preservative action of the smoke of tropical woods. This smoke is com-

posed of a complexity of gases, including hydrocarbons, carbon monoxide and dioxide, and, most important from our standpoint, slight quantities of acid and creosote vapors. The acid vapors bring about coagulation, but being in such dilute condition they cannot injure the rubber fibre. Creosote is known to be one of the most powerful preservative agents. Its action on the latex is to eliminate the protein matter which in time would cause the putrefaction of rubber which is known as tackiness. Finally, the heat of the smoke brings about the evaporation and consequent removal *during* coagulation of a large percentage of the water in the latex. This, it is presumed, will allow a more perfect union of the molecular particles of rubber and a consequent greater intermolecular attraction (cohesion) than if all the water remained until *after* coagulation. This ought naturally to result in a *greater tensile strength*.

Our second contention, namely, that the standard of quality of plantation rubber can be raised to that of Brazilian Tapajoz Fine, can be proven by a series of experiments like those conducted by the designers of the smoke-coagulating machine described below. Furthermore, the latices are drawn from trees of the same species, as already mentioned; therefore they ought to be, and have been proven to be, very similar in chemical composition, and to yield to the same treatment with similar results. The loss of $20,000,000 per year is therefore an unqualified waste, and can be avoided, as it is simply the result of uneconomic production methods.

Regarding our third contention, namely, that the Brazilian process of coagulation can be applied to Eastern plantation conditions: We have performed many quantitative experiments which have proven beyond any doubt that the Brazilian coagulation operation can be performed by a machine.

The slowness and laboriousness of the Brazilian hand process is therefore no more a deterring factor to its use on plantations.

The coagulating machine, which M. H. Korn, civil engineer, and H. W. Farwell, lecturer and instructor in the department of physics at Columbia University, have evolved and patented after three years of study and experimentation, performs the coagulation operation exactly as the Brazilian does it, but with a very great saving in labor and time. The several machine models have shown under exact quantitative experiments that we can coagulate and cure up to 1½ tons of latex per day of 10 hours on one machine, the resulting rubber being exactly like the Brazilian grade of smoke cured rubber.

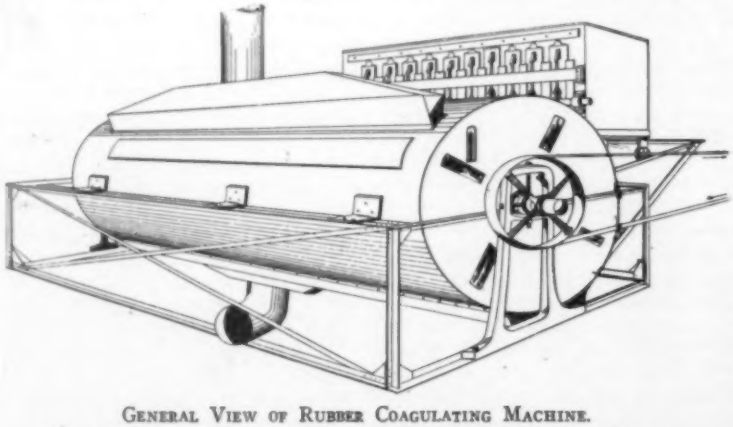
The efficiency of the machine and its large capacity are simply the result of:

(1) A larger coagulating area on which the latex may be exposed to the coagulating and curing action of the smoke.

(2) A more undiluted and thorough application of the smoke constituents.

(3) A more rapid, exact and even application to the coagulating cylinder of the minutely thin layers of latex, none of them being thicker than 0.008 of an inch (0.2 of one millimeter).

(4) The timely use of a correct and evenly preserved smoke-temperature.



General View of Rubber Coagulating Machine.

General dimensions: 6′ 0″ x 4′ 0″ x 5′ 0″. Patented in the plantation rubber producing countries.

Designed by Max Henry Korn, C. E., 82 Beaver St., New York. Hermon W. Farwell, A. B., Dept. Physics, Columbia University.

GENERAL STRUCTURE OF THE COAGULATING MACHINE AND ITS MODE OF OPERATION.

In order to obtain a general conception of the structure of the machine reference will be made to the perspective drawing in the following description:

The machine consists essentially of a smoke chamber, within which a coagulating cylinder revolves at a constant speed, and which is carried by lugs on the truss frame. A smoke inlet and an exhaust port are so disposed over the surface of the smoke chamber that the coagulating smoke, which is kept at a constant temperature throughout, will completely envelope the coagulating cylinder at all times. The latex is conveyed from the general receiving tank to the latex-reservoir seen in the drawing on top and a little to one side of the smoke chamber. The reservoir runs on a track, bolted to the rear of the truss frame, so that it may be moved toward or away from the coagulating cylinder as required. The front face of the reservoir is fitted with a series of orifices, which are opened and closed by means of gates. These gates are actuated by a central cam shaft and a series of cams. The cam shaft is operated by a set of intermittent or "time" gears, which in turn obtains its power from the main shaft of the coagulating cylinder. This time gearing, not seen in the illustration, is a necessary and ingenious adjunct to the machine, inasmuch as it provides for and automatically takes care of the most disturbing factor in smoke coagulation, namely, the variation in the percentage of water contents in the latex. The rapidity of smoke coagulation depends almost entirely on this. The time gearing gives a range of from one-quarter to five times the average length of time required to completely coagulate a layer of rubber of constant and predetermined thickness. The sectional area of the latex orifices may be varied somewhat, but is ordinarily set so that the flow from them is such as to deposit a layer of latex of 0.008 of one inch maximum thickness. The smoke generator is a simple grated combustion chamber so arranged that slow combustion of the fuel will take place in order to generate the maximum amount of smoke. The gases of combustion are drawn into the machine by suction, there set in whirling motion to reach every exposed particle on the surface of each new layer of latex, and are then expelled into the atmosphere. The orifices are protected against any possible clogging by precautionary devices, which have shown their effectiveness in actual tests on models of the machine.

The operation of the machine is somewhat as follows: The batch of milk to be coagulated during the day, and stored in a general receiving tank, is first tested for its water contents by means of a small gage. The percentage of water present being known, the intermittent gearing which fixes the time allowed each new layer of latex to coagulate and cure is set by the movement of a setting lever to the correct time gear. The latex is then allowed to run into the reservoir, which it will fill to a certain depth, kept constant throughout the operation. The smoke generator, having been started, it is made to pass into and through the machine. Before entering, however, the gases are brought to the correct temperature for proper curing, considering the water

contents of the latex and several other factors. The coagulating cylinder may now be started revolving, and the time gearing operating the orifice gates set in motion. Successive, thin layers of latex will then be deposited upon the surface of the coagulating cylinder, and cured successively until the operation is stopped at night. The smoke chamber doors are then opened, and the whole thickness (possibly up to a foot thick) of the coagulated rubber is removed from the cylinder. The machine is then ready for the following day's work, except for certain mechanical cleaning and oiling.

The economic importance and value of the machine can be easily appreciated by the plantation owners, but it will be interesting to enumerate some of the beneficial results of its installation and use:

(1) It will eliminate the enormous loss incurred through present uneconomic coagulation processes.

(2) It will materially reduce the operating expenses on plantations, for the machine with only one attendant will convert the fresh latex into smoked rubber.

(3) It would put plantation rubber on a sounder basis in its competition with "wild rubber," and thereby increase the value of plantation rubber investments to a material extent.

Throughout the work of mechanical development and final design of the present embodiment of the machine, the designers kept the fact in mind that in order to avoid committing serious errors of design it would be necessary to construct a machine which in principle would perform the Brazilian method of coagulation and curing exactly as the Brazilian does it. In the development of the present machine the designers were greatly assisted by their friends in Brazil and the East whose reliable information regarding the Brazilian process and other important conditions of production was found to be necessary to the successful completion of the designs of the machine. The designers were especially careful to verify all the important phases of the process by personal experiments conducted in the laboratories with a quantity of fresh latex sent for that purpose from the Ceylon plantations. All these experiments were performed quantitatively, the results being noted very carefully on experimental log-sheets for future reference.

The construction and operation of the machine are both extremely simple, for the designers realized that next to embodying the principle of the Brazilian smoking process the machine must be very simple to operate, and mechanically suited to the conditions existing on plantations. The capacity of the largest practicable machine is about 1½ tons of latex per day of 10 hours continuous operation. Smaller machines with less output, but capable of equally efficient results, can, however, be built to suit the individual demands of the various plantations.

RUBBER GOODS MANUFACTURING CO.'S FIFTEENTH ANNUAL MEETING.

ON April 9, 1914, the Rubber Goods Manufacturing Co. held its fifteenth annual meeting at the registered offices of the company in Jersey City. The president presented the following report:

REPORT OF PRESIDENT WILLIAMS.

TO THE STOCKHOLDERS OF THE RUBBER GOODS MANUFACTURING CO.:

The fiscal year 1913 witnessed a very large decline in prices. This, of course, reduces the value of the goods sold. The quantity of goods sold compares very favorably with previous years. The total net sales of our product were $35,640,365 (the tire sales included in this total not being the deliveries of the factories to the United States Tire Co., but a proportion of the United States Tire Co.'s actual sales based on the deliveries).

The net profits were less than in the year 1912, due to the declining market and a very sharp reduction in tire prices.

As our tire manufacturing subsidiaries required a larger amount of working capital, six per cent. preferred stock of certain tire companies was issued during the year to an amount aggregating $1,300,000 the same being subscribed for by the United States Rubber Co.

The usual policy of maintaining our plants in good repair has been followed. The enlargement of the Morgan and Wright tire plant at Detroit is nearing completion and its capacity is steadily increasing.

The report of the treasurer appended hereto gives the consolidated general balance sheet and consolidated statement of the Rubber Goods Manufacturing Co. and its subsidiary companies for the fiscal year ending December 31, 1913.

Respectfully submitted,
ELISHA S. WILLIAMS, PRESIDENT.

TREASURER'S REPORT.

RUBBER GOODS MANUFACTURING CO. AND SUBSIDIARY COMPANIES.
Consolidated General Balance Sheet, December 31, 1913.

ASSETS.

Property, plants and investments		$31,908,175.92
Inventories, mf'd goods and materials	$8,109,176.69	
Cash	3,086,753.77	
Bills and accounts receivable	9,958,320.78	21,154,251.24
Stock owned in General Rubber Co.	1,666,700.00	
Securities owned	384,030.55	2,050,730.55
Sinking fund cash in hands of trustee		422,541.35
Miscellaneous assets		432,357.62
Total assets		$55,968,056.68

LIABILITIES.

Capital stock, preferred	$10,351,400.00	
Capital stock, common	16,941,700.00	
Capital stock, subsidiary companies	1,337,500.00	$28,630,600.00
Bonds of Mechanical Rubber Co. and N. Y. Belting and Packing Co		953,000.00
Reserve for redemption of bonds		382,295.77
Bills and accounts payable		8,846,747.85
Accounts payable to General Rubber Co		5,938,105.18
Reserve for federal income tax		51,853.60
Reserve for accidents to employes		89,725.69
Fixed surplus (subsidiary companies)		2,499,218.65
Surplus		8,576,509.94
Total liabilities		$55,968,056.68

Contingent liabilities for certain guarantees, which are offset by corresponding contingent assets, are not included.

CONSOLIDATED SUMMARY OF INCOME AND PROFIT AND LOSS FOR YEAR ENDED DECEMBER 31, 1913.

Earnings		$3,198,597.68
Income from investments		291,672.50
		$3,490,270.18
LESS:		
Expenses of home office	$114,006.90	
Interest on bonded and floating debt	998,455.24	
Federal income tax, 1913	51,853.60	1,164,315.74
NET PROFITS		$2,325,954.44
Surplus and working capital, Jan. 1, 1913		8,728,891.00
		$11,054,845.44
*Dividends	$2,462,518.00	
Reserve for redemption of bonds	15,817.50	2,478,335.50
Surplus and working capital, Dec. 31, 1913		$8,576,509.94

Respectfully submitted,
E. J. HATHORNE, Treasurer.

*Includes $43,750 paid minority interests in one subsidiary company.

ANNUAL ELECTION.

At the annual meeting the following directors were re-elected:

Walter S. Ballou, Ernest Hopkinson,
Nicholas F. Brady, Charles A. Hunter,
Samuel P. Colt, Lester Leland,
Frank W. Eddy, Raymond B. Price,
James B. Ford, Homer E. Sawyer,
Elisha S. Williams.

The Obituary Record.

JOHN H. FORSYTH.

JOHN HAMILTON FORSYTH, associated for nearly fifty years with the Boston Belting Co., died on April 14 at his residence in Winthrop, Massachusetts. Mr. Forsyth was born in Brookline, a suburb of Boston, March 19, 1842. At a comparatively early age he became identified with the Boston Belting Co., with which his father, William Forsyth, was connected. He left the company, however, temporarily, to make a thorough study of the machinists' trade, and having thoroughly mastered this subject he returned to the company as its master mechanic. He held this position for a number of years, and then became assistant superintendent.

JOHN H. FORSYTH.

Mr. Forsyth was well known to many of the older mill men through New England, and in fact other sections of the country, whose plants he visited with a view to installing in them rubber covered rollers and other lines of rubber goods. He retired from active participation in the company in 1912, at which time his associates addressed him a letter of appreciation, from which the following is a paragraph:

"Your connection with the Boston Belting Co. has closely continued, almost without interruption, for over fifty years, a remarkably long period. You have witnessed in that time great changes in many ways, and have been yourself an important factor in the growth and development of the company's business. You have served the company faithfully and well, and with your devoted brothers have applied painstaking care, ingenuity, skill and energy in various ways, which have contributed to the welfare and success of the Boston Belting Co."

Mr. Forsyth was broadly philanthropic, as an illustration of which might be cited the great Forsyth Dental Infirmary given by himself and his brother Thomas to the school children of Boston in memory of James Bennett and George Henry Forsyth. This institution, the initial donation for which was half a million dollars, was not only original in its character, but almost incalculable in the benefits that will flow out from it year after year to the poor children of Boston and vicinity.

The funeral services were held at St. John's Episcopal church in Winthrop on April 17, and during that hour all work at the Boston Belting Co.'s factory and at the Dental Infirmary was suspended.

J. ELLWOOD LEE.

J. Ellwood Lee, president of the Lee Tire & Rubber Co., of Conshohocken, Pennsylvania, died April 8 at his home in that city, of heart trouble and hardening of the arteries. He was born in 1860, and in 1883, when but 23 years of age, he started a small business in the manufacture of surgical rubber goods.

J. ELLWOOD LEE.

This prospered, and under the name of the J. Ellwood Lee Co. became a very well known and successful concern. Later he began the manufacture of tires, and the name of the corporation was changed to the Lee Tire & Rubber Co. Mr. Lee was not only a man of considerable inventive genius, but he was an organizer and executive of marked ability, and his business career was an exceptionally successful one.

His wife and three children—J. Ellwood Lee, Jr., Mrs. Elsie Carthwaite and Miss Nina Lee—survive him.

GEORG HEISE.

Georg Heise, director of the Hannoversche Gummiwerke, "Excelsior," of Hannover-Linden, Germany, died March 24. He had been connected with this company for 42 years, and was not only successful as a rubber manufacturer, but was widely known and very popular in the rubber trade of Germany.

JACOB HAMMER.

Word has been received of the death a few days ago at El Centro, California, of Jacob Hammer, for the last ten years president of the Colorado Rubber Co.

Mr. Hammer's ancestors were among the pioneers in the settlement of St. Paul, Minnesota, and as a boy he was connected with a bank in that city. Later he joined the St. Paul Rubber Co. and became its secretary and treasurer, but about ten years ago his health began to fail and it was necessary for him to seek a different climate, so he went to Denver and took up his residence there and established the Colorado Rubber Co., becoming its president.

Tho this change of residence undoubtedly prolonged his life many years, it did not restore him to his former physical condition; but notwithstanding the fact of his continued ill health, he bore himself with a cheerful stoicism, applied himself industriously to his work and was agreeable and companionable

with everyone he met. While his life was spent chiefly in the West, he had many warm friends among the rubber men of the East.

SAMUEL HEILBUT.

Samuel Heilbut, member of the great London rubber importing house of Heilbut, Symons & Co., and for the last half century prominent in rubber circles in England and the continent, died in London on the morning of April 3. Mr. Heilbut was not only one of the leading rubber importers of England, but he was one of the few people who early saw the prospective productiveness of the Eastern plantations, and many years ago he became an extensive shareholder in some of the plantations that later proved very profitable. The firm of Heilbut, Symons & Co. was established in London in 1849 and opened a branch in New York in 1864. It has branch offices in Liverpool, Hamburg, Antwerp, Paris, Bordeaux and in Pará and Manáos. The two surviving partners, Frederic C. Pusinelli and Hermann Reimers, both happened to be in New York at the time of Mr. Heilbut's death. Mr. Pusinelli immediately returned to London, while Mr. Reimers sailed for Brazil to look after the company's interests there.

RESOLUTIONS ON THE DEATH OF GEORGE P. WHITMORE.

The following resolution was adopted by the Executive Committee of the Rubber Club of America at a recent meeting:

Whereas, Death has released from its earthly tenement the spirit of our beloved former treasurer and fellow-member, George P. Whitmore, we, the members of the Rubber Club of America, in token of our deep grief, tender the following resolutions:

RESOLVED: That in the passing of George P. Whitmore, the rubber trade and business world lose one whose record, clean, consistent, unblemished, marked him as one to be respected and chosen as a worthy example for those who follow; whose personality, pulsing with friendliness, charity and wholesome common sense, won for him the esteem and love of all who came in touch with him.

RESOLVED: That his memory, cherished as a beloved member and a co-founder of the club, be often before us, and to that end that these resolutions become a portion of the records of the club.

RESOLVED: That a copy of these resolutions, with the deep sympathy of the club, be engrossed and sent to the loving companion who shared the burdens and joys of his life for so many years, and to the last comforted and strengthened him with wifely counsel and unremitting care.

March 6, 1914.

Committee on Resolutions: Elston E. Wadbrook, Chairman; Elisha S. Williams, L. Dewart Apsley.

LATEST REPORT ON NAVY SPECIFICATIONS.

MR. W. C. GEER, of Akron, the secretary of the Manufacturers' Sub-Committee on the revision of the rubber specifications of the United States Navy Department, submits the following report showing what has been done by the general committee and the two sub-committees—one representing the navy department and the other the rubber manufacturers—appointed in December, 1911, to draw up a set of specifications that should be at once satisfactory to the government departments and to the manufacturers of rubber goods used by the departments.

Mr. Geer has sent a copy of this report to the manufacturers interested, and asks for their comments and criticisms, and particularly for suggestions as to any new points not yet discussed by the members of the committees. His report is as follows:

On December 15, 1911, a conference of rubber manufacturers was called by the Navy Department, with a view to discussing the specifications for rubber goods then in use by the Navy. This conference was called as a result of more or less dissatisfaction, which had been expressed by the manufacturers, over the uncertainties and inconsistencies in the Navy specifications. It was thought that by securing an expression of opinion from the manufacturers themselves, some action might be taken by the Navy Department, which would make it possible to eliminate those parts of the specifications which were unsatisfactory either to the manufacturers or to the Navy.

In response to the Navy Department's invitation nearly forty attended the conference, some of whom represented other departments than the Navy, while the majority represented rubber manufacturers. Naval Constructor E. S. Land, of the Bureau of Construction and Repair, U. S. N., acted as Chairman of the Committee. So many manufacturers were present, and so many suggestions made as to the method of procedure, that it was thought advisable to appoint a committee consisting of two sub-committees, one to represent the rubber manufacturers and the other the various Government departments. After short, separate conferences of the sub-committees, the Whole Committee decided upon a plan of action involving a revision of the specifications to provide for the elimination of the undesirable features, while maintaining the high grade of material demanded by the Government. The chief difference of opinion among those at the conference centered around elimination from the specifications of all reference to grades of rubber and chemical composition, and the substitution therefor of such physical tests as would insure the purchase of as high grade materials as those purchased under the existing specifications.

The members of the Manufacturers' Sub-Committee agreed that they would, in a series of subsequent meetings, work out a revision of the specifications which would embody the ideas of the majority of the manufacturers represented. These should be submitted to the Committee of the Whole for discussion and adoption if the proposed changes should prove acceptable to the Government departments. After two meetings it was found that a fundamental difference of opinion existed among the manufacturers relative to the proposed changes. Accordingly, a report was drafted consisting of a majority report favoring elimination, and a minority report favoring retention of specifications respecting chemical composition of the rubber. This report also included a unanimous report in favor of the adoption of standard testing methods and testing machines.

The report was mailed to Chairman Land, with the request that it be considered by the Government Sub-Committee and that the manufacturers be advised of the opinions of the Government departments with respect to the fundamental question involved. The Government departments stood unanimously opposed to the elimination of chemical requirements, and suggested that the manufacturers proceed to revise the specifications only so that they might conform to the best commercial practice. Accordingly, the Manufacturers' Sub-Committee in a series of seven meetings, proceeded to redraft all of the Navy specifications. These meetings continued at intervals through the year 1912.

Finally, in April, 1913, the chairman called a meeting of the Committee of the Whole to discuss the specifications as revised. The members of the Government Sub-Committee accepted as satisfactory, and agreed to adopt the revised specifications, with slight changes, which were decided upon by both sub-committees during the meeting. It was thought best to continue the Committee of the Whole so that if further action were necessary either in respect to the interpretations or revision of the specifications already adopted, it could be taken without delay.

Owing to the congested condition of the Government Printing Office it was impossible to issue the revised uniform specifications immediately upon their adoption, but they were issued from time to time, commencing with July, 1913. An official notification, countersigned by Chief Constructor R. M. Watt, Chief of the Bureau of Construction and Repair, dated January 24, 1914, was sent by Chairman Land to the Secretary of the Manufacturers' Sub-Committee, announcing the adoption of the revised specifications, as follows:

"As a result of the conference of the Rubber Manufacturers of the United States and representatives of the Government departments in Washington, held in the Bureau of Construction and Repair, Navy Department, Washington, D. C., December 15, 1911, a revision of rubber specifications for the Navy Department was undertaken, and the results of this revision were promulgated by the Navy Department in the form of revised drafts of specifications, which were issued during the summer of 1913. Each specification so revised bears a notation in the 'reference' at the end of the specifications showing that action was taken by the 'Rubber Specifications Committee.'"

Several matters are still pending with the Government which will be taken up in the near future. Some of them now under way are the following:

1. The trying out of specifications not requiring chemical analysis (Air Hose, specifications 34-H-8).
2. The development of commercial specifications not requiring so large a percentage of fine Pará rubber, which will give them a good, serviceable grade of packing for cold water purposes.
3. Obtaining from the Government half of the committee, an official definition of method of analysis, interpretation of results, and other important matters, thus eliminating existing conditions involving possible differences of opinion.

News of the American Rubber Trade.

THE LOEWENTHAL CO. AGENTS FOR "BROWN JACO."

IN addition to conducting a very extensive business in scrap rubber, The Loewenthal Co., located at 37 West 39th street, New York, have been appointed sole agents for Ernst Jacoby & Co., Inc., of 79 Milk street, Boston, for the sale of rubber substitutes of all kinds and more particularly of "Brown Jaco," the new substitute mentioned on page 374 of our April issue. This company also handles a special grade of hydrocarbon under the name of Loewenthal Mineral Rubber, besides being in a position to quote prices on practically every kind of compounding material—barytes, talc, red oxide, sulphur, blanc fixe, etc.

UNITED STATES TIRE CO. DISPOSES OF TWO BRANCHES.

The United States Tire Co. has discontinued its branch houses at Syracuse and Rochester, New York, turning over the wholesale distribution of its product in these two cities to the Syracuse Rubber Co. and the Rochester Rubber Co., respectively. The former manager of the Syracuse branch, Charles Fennel, has become associated with the Syracuse Rubber Co., while Manager Norbury, of the Rochester branch, has been transferred to the company's branch house at Buffalo, and Stanley Keller, formerly with the Rochester branch, is now in the employ of the Rochester Rubber Co.

AMERICANS MAKING TIRE FABRICS IN CANADA.

A numbef of Americans who have been very successful in the manufacture of tire fabrics in Connecticut have recently organized a new company and built a finely equipped plant for this same sort of work in Canada. This new company is the Canadian-Connecticut Cotton Mills, Limited, and its plant is at Sherbrooke, Quebec. The company is capitalized at $1,750,000, and the capital issued amounts to $1,100,000. The officers are: H. L. Burrage, Boston, president; R. J. Caldwell, New York, vice-president; Tracy S. Lewis, Beacon Falls, Connecticut, treasurer, and Obadiah Butler, of Sherbrooke, secretary and manager. This mill is closely allied with the Connecticut Mills Co., of Danielson, Connecticut, manufacturers of tire fabric, the officers of which are: Mr. Lewis, president and treasurer; Mr. Caldwell, vice-president; Mr. Burrage, chairman of the board, and William B. Fittz, Danielson, secretary and manager.

This new Canadian company hopes to be able to supply the Canadian tire manufacturers with a large part of their fabric, and is said to have a number of them already among its customers. In addition to tire fabrics it will make cotton dryer felts for paper mills.

A NEW WATERPROOF GUM.

The February issue of this publication mentioned the incorporation of the British-American Manufacturing Co., which in turn controls the American Ramie Co. The American Ramie Co., interested, as its name implies, in the manufacture of ramie textiles, has been in operation for some four or five years, but the British-American company was recently formed, with factory at Laurel, Maryland, to manufacture waterproof fabrics, principally for use in making garments. It does not use rubber, but employs an imported gum, the utility of which for waterproof purposes has but recently been discovered. This gum can either be incorporated with the fabric or spread over the surface. The company makes material of both kinds. The company has already submitted bids for extensive contracts with the Government for material for army garments. The vice-president of the company, W. M. Mackintosh, is a Scotchman, and belongs to the family which contributed the name "Mackintosh" to the rubber garment industry. Dr. L. C. Himebaugh, the secretary and treasurer, is also the laboratory expert. Previous to going with this company he was associated for five years with the Lederle laboratory in New York.

CAPITAL INCREASES.

The Apsley Rubber Co., of Hudson, Massachusetts, has increased its capital stock from $1,000,000 to $1,500,000, having issued 5,000 additional shares of preferred stock at $100 per share. The new stock was offered to both common and preferred stockholders, in the ratio of one new share for every two shares of stock held, the right to subscribe expiring on April 2.

Stockholders of the Falls Tire & Rubber Co., of Cuyahoga Falls, Ohio, at a meeting held late in March, voted to increase the capital stock of that company to $300,000, its former capitalization having been $200,000. At that meeting it was also decided to establish a factory branch at Cleveland, Ohio, to succeed the F. J. Allen Co. which for the past year has acted as the company's agent in that city. John Welton, Jr., of Akron, will be in charge of the new branch, and he will have associated with him Frank T. Williams and F. J. Allen, both of whom were formerly connected with the Allen company.

The McNaull Auto Tire Co., of Cleveland, Ohio, has increased its capital stock from $75,000 to $175,000, the new issue being 7 per cent. participating preferred stock. It has also arranged for the erection of a plant at Toledo, Ohio, where tires are to be manufactured, under patents issued to W. D. McNaull.

The capital stock of the Pharis Tire & Rubber Co., of Columbus, Ohio, has been increased from $50,000 to $100,000.

RUBBER COMPANY DIVIDENDS.

The following notice was sent out on April 2 by the treasurer of the United States Rubber Co.: "The Board of Directors of the United States Rubber Co. has this day declared from its net profits a quarterly dividend of 2 per cent. on the first preferred stock, a quarterly dividend of 1½ per cent. on the second preferred stock, and a quarterly dividend of 1½ per cent. on the common stock of the company, to stockholders of record at 3 p. m. on Wednesday, April 15, 1914, payable, without closing of the transfer books, April 30, 1914."

The B. F. Goodrich Co declared on April 22 a regular quarterly dividend of 1¾ per cent. on the preferred stock, payable July 1 to stockholders of record on June 19.

The McGraw Tire & Rubber Co. on April 3 declared a dividend of 1¾ per cent. on its preferred stock.

The Swinehart Tire & Rubber Co. has declared a quarterly dividend of 1½ per cent., payable May 10.

TEN PER CENT. FOR ALDEN CREDITORS.

The district court of Boston confirmed late in March the composition offer of 10 per cent. made to the creditors of Geo. A. Alden & Co., of that city. The offer calls for the distribution of $232,391.75 among creditors of the firm.

According to the schedules in bankruptcy filed June 3, 1913, the company had liabilities of $4,090,825, and assets of $1,605,000. The company was petitioned into voluntary bankruptcy in February, 1913.

SALE OF THE WALPOLE TIRE & RUBBER CO.

The Walpole Tire & Rubber Co. is to be disposed of by public sale to be held at Walpole, Massachusetts, commencing at 10:30 a. m. on Monday, May 11, the property to go to the highest bidder and $1,150,000 having been fixed as a price below which it will not be sold. This sale will be conducted by the receivers, Robert O. Harris and Robert C. Fisher. The organization committee is said to be prepared to buy in the property.

KELLY-SPRINGFIELD TIRE CO. PLANNING BOND RETIREMENT.

At a special meeting of the shareholders of the Kelly-Springfield Tire Co., to be held May 4, consideration will be given to the adoption of a plan to retire the 4 per cent. income debenture bonds of the company by issuing therefor an equal amount of par value 6 per cent. cumulative preferred stock, on the basis of one share of stock for each $100 face value of bonds; also to refund the 78½ per cent. of dividend accumulated upon the present issue of 6 per cent. preferred stock by issuing 7 per cent. cumulative second preferred stock, each share, if authorized, to be converted into one share of common stock at the option of the holder at any time before July 1, 1924. The consenting bondholders are to deposit bonds with a trust company to be designated, and the plan will become operative only if bonds of a sufficient amount shall be deposited to justify the directors in pursuing this course.

RUBBER COMPANY SHARE QUOTATIONS.

The following market quotations of the shares of rubber manufacturing companies on April 20 last are furnished by John Burnham & Co., 31 Nassau street, New York, and 41 South La Salle street, Chicago:

	Bid.	Asked.
Ajax-Grieb Rubber Co., common	200	...
Ajax-Grieb Rubber Co., preferred	98	102
Firestone Tire & Rubber Co., common	284	290
Firestone Tire & Rubber Co., preferred	107½	109
B. F. Goodrich Company, common	25	26
B. F. Goodrich Company, preferred	86	89
Goodyear Tire & Rubber Co., common	170	178
Goodyear Tire & Rubber Co., preferred	95	96½
Kelly-Springfield Tire Co., common	55	57
Kelly-Springfield Tire Co., preferred	135	140
Miller Rubber Company	135	140
Portage Rubber Co., common	...	25
Portage Rubber Co., preferred	...	75
Rubber Goods Mfg. Co., preferred	100	110
Swinehart Tire Company	60	65
U. S. Rubber Co., common	56½	57½
U. S. Rubber Co., first preferred	101	102

THE NATIONAL FIRE PROTECTION ASSOCIATION TO MEET.

Members of the National Fire Protection Association will hold a three days' convention at Chicago from May 5 to 7. The meetings will take place in the Auditorium, and among the subjects discussed will be "New Features In the Work of Underwriters' Laboratories," by William H. Merrill, manager of the Underwriters' Laboratories. The afternoon of the second day will be devoted to a visit to the laboratories, where a number of tests will be made by the engineers connected therewith.

STATEMENT OF THE INDIA RUBBER WORLD.

Statement of the ownership, management, etc., of THE INDIA RUBBER WORLD, published monthly at New York, N. Y., required by the Act of August 24, 1912.

Editor, Henry C. Pearson, Tompkins Corners, Putnam Co., New York.

Managing editor, John P. Lyons, 201 West 105th street, New York.

Business manager, E. M. MacPhee, 344 West Forty-eighth street, New York.

Publishers, The India Rubber Publishing Co., 25 West Forty-fifth street, New York.

Owner, Henry C. Pearson, Tompkins Corners, Putnam Co., New York.

Known bondholders, mortgagees, and other security holders, holding 1 per cent. or more of total amount of bonds, mortgages, or other securities: None.

(Signed) E. M. MACPHEE, Business Manager.

Sworn to and subscribed before me this 24th day of March, 1914. (Signed) WILLIAM B. HILL, Notary Public,

(Seal) Kings County.

(My commission expires March 31, 1915.)

Certificate filed in New York County.

MR. BIRKENSTEIN PRESIDENT OF THE WASTE DEALERS.

The election of Louis Birkenstein, of the firm of S. Birkenstein & Sons, Chicago, to the presidency of the National Association of Waste Material Dealers was mentioned in the April

LOUIS BIRKENSTEIN.

issue of this publication, in the description of the first annual dinner held by that association. Mr. Birkenstein has also held the position of president of the Scrap Rubber Dealers' Club, and is very active in that industry. His company is, in fact, one of the largest engaged in this sort of work in America, having been founded as far back as 1866 by his father, under the name of S. Birkenstein & Co. Mr. Birkenstein became a partner in his father's firm in 1890, and his brothers were admitted to partnership in 1901.

PERSONAL MENTION.

Frederic Dannerth, known to many people in the rubber trade as a consulting chemist, is at present connected with the Cheney Silk Co., of South Manchester, Connecticut, being in charge of their development work.

E. L. Bullock, president of the Katzenbach & Bullock Co., of New York and Trenton, importers and dealers in chemicals and colors, sailed for Europe on the 20th of April. He expects to make an extended trip in the interest of his company, visiting its foreign connections in Holland, Germany, France, England and Spain. The Katzenbach & Bullock Co. specializes in materials for the rubber trade, and has a large and constantly increasing business.

Frank W. Thropp, secretary of the John E. Thropp's Sons Co., sailed late in March on the "Oceanic" for a two months' visit to London, in the interest of the Delaski & Thropp Patented Auto Tire Co. and for health and pleasure. He was tendered a dinner and card party a few evenings before the date of sailing.

THE BIG BRADY RUBBER HOLDINGS.

Referring to the large estate left by the late Anthony N. Brady, director of the United States Rubber Co., the "Boston News Bureau" remarks: "Mr. Brady was far and away the largest stockholder in United States Rubber. The par of his investment in this company was about $14,000,000, or 15 per cent. of total stock capitalization." This same publication goes on to say that there is no truth in the rumor that the Brady estate has recently been parting with its rubber holdings on quite an extensive plan. The Bureau states that the administrators of the estate have only parted with such shares in this and other properties, with which he was identified, as it was necessary to convert into cash in order to pay the large inheritance taxes in New York and London.

A COMPLIMENTARY DINNER TO MR. RODENBACH.

After the regular meeting of the Rubber Reclaimers' Club, held on April 2 at the Hotel Vanderbilt, New York, the members adjourned to one of the handsome banquet rooms of that famous hostelry for the purpose of giving a complimentary dinner to Mr. W. T. Rodenbach, who, having recently resigned from his position in the reclaiming work of the United States Rubber Co. at Naugatuck, Connecticut, gives up his association with this important industry in which he has been such an important figure for the last quarter of a century. The dinner was presided over by Capt. F. H. Appleton, the president of the club. When they had completed an appreciative consideration of the menu—which was a fine illustration of what the Vanderbilt chef could achieve when giving his genius a free rein—Capt. Appleton addressed the guest of honor and read the following resolution, passed by the club:

"A committee appointed by the Rubber Reclaimers' Club for the purpose of presenting resolutions on the occasion of the severance of your connection with the club, hereby

"RESOLVE, That your withdrawal from membership in this club, thereby severing the ties that have bound us together for so many years, prompts us at this time to tender to you an expression of our appreciation of your many acts of friendship and kindness to all the members of the club.

"Knowing your usefulness and efficiency, as we do, and the strong impression you will leave with our members who have been so long associated with you, and our realization that through your zeal and fidelity to the club your words and acts have always been helpful to its members;

"We, therefore, tender to you our most gracious wishes for your future success in any business upon which you may enter, and hope that the ties which have existed in the past between you and the members of this club may never be severed.

"And it is further

"RESOLVED, That this testimonial be presented at a dinner given in your honor at the Hotel Vanderbilt, New York City, April 2, 1914."

The Captain paid Mr. Rodenbach a most eloquent tribute and was followed in similar vein by practically everyone present. And last of all Mr. Rodenbach rose to respond. His many years of activity in the civic life of the community in which he has lived has made Mr. Rodenbach an exceptionally ready speaker, and his address was a great addition to the enjoyment of the evening; and, incidentally, it showed how thoroughly he appreciated the genuineness of the tribute paid him by these men with whom he had been associated so intimately and so pleasantly for so many years.

TRADE NEWS NOTES.

The extent and growth of the business done by the Minneapolis branch of the Fisk Rubber Co., of Chicopee Falls, Massachusetts, demanding larger quarters and improved facilities, the company has secured a building of its own, at 1423 Hennepin avenue, to which this distributing depot has been removed.

The Mansfield Tire & Rubber Co. is erecting an addition to its tire manufacturing plant at Mansfield, Ohio.

The Miller Rubber Co., of Akron, has established sales offices in Indianapolis, Indiana, at 429 North Meridian street, of which L. B. Broering is manager.

A concern known as the Alamo Tire & Rubber Co. has been formed at San Antonio, Texas, for the sale in that section of Republic tires. Alfred Muller, who is well known in the local tire trade, is at the head of this new concern.

A branch store has recently been opened at 1506 Pacific avenue, Atlantic City, by the Hardman Tire & Rubber Co. for the sale of its tires in that city and the surrounding sections of New Jersey.

A new factory is to be erected by the Bishop Gutta Percha Co. at 417 East Twenty-fourth street, New York City. This building is to be five stories high, to have a floor area 50 x 98 feet, and is expected to cost in the neighborhood of $30,000.

A branch sales store has been opened at 2032 Commerce street, Dallas, Texas, by the Automobile Tire Co., of New York City, in charge of Robert Clausius.

The agency for Republic tires at Indianapolis, Indiana, formerly located at 25 West Michigan street, has been moved to 425 North Capitol avenue.

The entire plant and property of the Frontier Tire & Rubber Co., of Buffalo, New York, has been disposed of by the referee in bankruptcy, by sale to Al. G. Irr, at a price of $10,250. This amount is almost $4,000 in advance of that offered on bids by parcels.

At the annual meeting of the Detroit Pneumatic Tire Co. recently held at Detroit, Michigan, the following officers were elected for the ensuing year: E. W. Wilson, president; Peter J. Jeup, vice-president; T. S. Sprague, secretary; W. C. Morgan, treasurer. The board of directors is composed of these officers together with Frank H. Watson and Arthur P. Hicks.

The Batavia Rubber Co., whose plant and facilities at Batavia, New York, have been considerably enlarged, has secured as manager of sales for the Eastern district John B. Maus, at one time connected with the Goodyear Tire & Rubber Co. and more recently with the United States Tire Co. His headquarters will be at 1906 Broadway, New York.

The Texas Climatic Tire Manufacturing Association, recently organized, with a capital of $150,000, is to erect a plant at San Antonio, Texas, for the manufacture of automobile tires especially adapted to the climatic conditions of that state. Eliot W. Knight is named as general superintendent of the business of the association, whose officers are: J. A. Graham, president; Francis T. Parks, secretary; Edward H. Hicks, treasurer.

The Diamond Rubber Co.'s tire sales department in New York City has moved to 1780 Broadway from its former location at 225 West Fifty-seventh street.

The Ontario Tire & Rubber Co., Limited, incorporated February 14, 1914, under the laws of New York, with a capital of $50,000, to manufacture and deal in tires and rubber goods, has purchased a factory building at Welland, Ontario, where machinery is being installed.

A NEW COMMISSION HOUSE IN COTTON GOODS.

Taylor, Armitage & Co., Inc., is the name of a new concren organized to carry on a general commission business in cotton goods, with an office at 346 Broadway, New York. The president of this company is M. C. Taylor, formerly president of the International Cotton Mills. The manufacturing interests will be looked after by J. F. Armitage, formerly general manager of the International mills and also vice-president of the J. Spencer Turner Co. The secretary and sales manager is R. P. M. Eagles, well known to the rubber trade, having formerly been vice-president of the Boston Yarn Co. and also having been associated with the J. Spencer Turner Co. This new company will act as the sole selling agent for the Passaic Cotton Mills and the American Textilose Co. and probably very soon for several other mills.

MOTOR TRUCKS AND STREET CLEANING.

Compilations of figures on the cost of street cleaning show that the use of motor trucks in this department of its work has saved the city of Chicago probably not less than a million dollars a year. Similar statistics compiled in London show a saving during the year 1911-12, when motor trucks were in use, over the year 1905-06, when horse-drawn vehicles were employed, of amounts ranging as high as $895 per mile in certain boroughs. The total saving is estimated at $220 a mile on 2,154 miles of street, or $473,880 annually.

THE UNITED STATES RUBBER CO. ADOPTS A TRADE MARK.

The United States Rubber Co. has recently adopted the trade mark which is illustrated here, and which was used for the first time in its recent annual report. The company controls, of course, a vast number of trade marks, each of the subsidiary companies having one or two general trade marks, besides many others applicable to certain products, but this appears to be the first time since the company was formed, some twenty-two years ago, that it has deemed it advisable to adopt a general mark applicable to the entire system. The advantage of having a symbol that shall stand for the company as a whole is obvious.

NEW INCORPORATIONS.

Advance Tire Sales Co., Inc., March 23, 1914; under the laws of New York; authorized capital, $5,000. Incorporators: Grace A. Burnette, 1733 Broadway; George L. Lewis and Charles H. Stanton, both of 42 Broadway—all in New York City.

Alling Rubber Co., March 25, 1914; under the laws of Pennsylvania; authorized capital, $10,000. Incorporators: Clarence E. Alling, Stamford, Connecticut; Arthur E. Alling, New Haven, Connecticut; Frederick F. Lockwood, Binghamton, New York, and Clarence D. Coughlin, Wilkesbarre, Pennsylvania. To deal in general merchandise, automobile and bicycle tires and sundries, sporting goods and rubber goods of every description.

Atlantic Aerial Navigation Co., April 15, 1914; under the laws of New Jersey; authorized capital, $125,000. Incorporators: Kenneth Robertson, James McCutcheon and Donald Robertson, all of 203 Federal street, Camden, New Jersey. To buy, manufacture, sell, repair, exhibit and deal in aeronautical, automobile and electrical accessories, and appliances or other paraphernalia used or capable of being used in the construction and operation of the same.

Atlas Tire Association, The, March 9, 1914; under the laws of Maine; authorized capital, $10,000. Incorporators: E. M. Leavitt (president and treasurer), Winthrop; R. A. Kittredge (director), Hallowell, and E. M. McLean (director), Augusta—all in Maine. To carry on the business of manufacturing, producing, buying, selling, exporting, importing and dealing in rubber and all goods of which rubber is a component part, etc.

Broderick Inner Tube Protector Co., February 19, 1914; under the laws of Delaware; authorized capital, $500,000. Incorporators: Wray C. Arnold, Lansdowne, Pennsylvania; Morris B. MacCauley, 516 Queen Lane, Germantown, Pennsylvania, and James M. Satterfield, Dover, Delaware. To manufacture, buy, sell and deal in automobile and bicycle tires, inner and outer tubes or coverings, tube protectors, etc.

C. & S. Rubber Sole Co., March 25, 1914; under the laws of Massachusetts; authorized capital, $50,000. Incorporators: Ernest L. Shaw, 35 Chester avenue; Francis E. Shaw, 326 West Elm street; Harvey F. Crawford, 952 North Main street; Herbert F. Bryant, 295 Ash street, and Emery M. Low, 234 West Elm street—all in Brockton, Massachusetts. To manufacture machines for improvements in shoes and tread members and for rubber soles, also the manufacture of rubber and rubber goods and soles of all kinds.

Consumer's Tire & Sales Co., March 23, 1914; under the laws of Delaware; authorized capital, $500,000. Incorporators: F. R. Hansell, Philadelphia, Pennsylvania; George H. B. Martin, Camden, New Jersey, and S. C. Seymour, Camden, Delaware. To buy, trade and deal in any and all kinds of crude, refined and manufactured rubber, gutta percha and other gums.

Delaware Tire & Supply Co., March 24, 1914; under the laws of Delaware; authorized capital, $25,000. Incorporators: Norman B. Mancill, Yorklyn, Delaware; John H. Bishop and Philip L. Garrett, both of Wilmington, Delaware. To manufacture and deal in all kinds of vehicles, automobile tires and accessories, etc.

Dunbar & Co., Inc., April 25, 1914; under the laws of New York; authorized capital, $200,000. Incorporators: Frederick W. Dunbar and Alfred T. Gibbs—both of Montclair, New Jersey—and George W. Utter, Brooklyn, New York. To deal in crude and other forms of rubber.

Hardman Tire & Rubber Co., April 3, 1914; under the laws of Illinois; authorized capital, $10,000. Incorporators: C. Beardsley, J. H. Jones, Jr., and F. W. Tyrrell. Location of principal office, Chicago.

Holstein Rubber Co., March 25, 1914; under the laws of Connecticut; authorized capital, $25,000. Incorporators: Joseph S. Holstein, Reuben R. Kusnott and May S. Gallagher—all of Hartford, Connecticut.

King Rubber Co., The, March 31, 1914; under the laws of Massachusetts; authorized capital $50,000. Incorporators: Charles A. Briggs, Norwood, Massachusetts; Albert H. Winn, Dover, New Hampshire; Maurice D. Kingsbury, 14 St. Botolph street, Boston, Massachusetts, and Emerson L. Dickerman, 23 Ware street, Cambridge, Massachusetts. To manufacture articles made in whole or in part of rubber, gutta percha, etc.

Motor Tire Reconstruction Co., The, March 13, 1914; under the laws of New Jersey; authorized capital, $250,000. Incorporators: Charles N. King, Jr., George H. Russell and William L. Steck—all of 243-5 Washington street, Jersey City, New Jersey. To buy, sell, deal and trade in, re-construct and re-manufacture rubber, rubber goods, etc.

Napa Tire & Rubber Co., March 20, 1914; under the laws of Delaware; authorized capital, $100,000. Incorporators: M. Leon Hirschbein and Anna Hirschbein—both of 1908 North Napa street, Philadelphia, Pennsylvania, and W. I. N. Lofland, Dover, Delaware. To buy and sell automobile tires, tubes and other automobile accessories. Location of principal office, 2003 West Columbia avenue, Philadelphia, Pennsylvania.

National Tire & Rubber Co., February 13, 1914; under the laws of Washington; authorized capital, $1,000,000. Incorporators: F. P. Maring, N. M. Lee and Frederick Gilbert—all of Seattle, Washington.

Newman Tire & Rubber Co., Inc., April 14, 1914; under the laws of New York; authorized capital, $5,000. Incorporators: Stanley Newman and Samuel C. Newman—both of 247 West One Hundred and Twenty-Seventh street—and Arthur Newman, 1775 Broadway—all in New York City. To sell, handle, job and deal in automobile tires, tubes and accessories. Location of principal office and sales room, 1775 Broadway.

Norwalk Tire & Rubber Co., March 23, 1914; under the laws of Connecticut; authorized capital, $1,500,000. Incorporators: Earle Banks, John Pierce and Sayre Youngs—all of Norwalk, Connecticut.

Norwalk Tire & Rubber Co., Inc., The, April 1, 1914; under the laws of New York; authorized capital, $1,000. Incorporators: Wm. B. Miller, 12 East Eighty-seventh street, New York City; David Spence, and Fred. L. Lambson—both of Norwalk, Connecticut.

Racine Rubber Tire Co. of New York, Inc., April 22, 1914; under the laws of New York; authorized capital, $3,000. Incorporators: Edgar Storms, Jr., Kew Gardens, Richmond Hill, New York; Edward W. Drucker, 53 East Ninety-Sixth street, New York City, and Barclay Ball, 41 Trask avenue, Bayonne, New Jersey.

Rexton Specialty Co., Inc., April 17, 1914; under the laws of New York; authorized capital, $1,000. Incorporators: Richard Siller, 1053 East Tenth street, Otto C. Grahmann, 1264 Decatur

street—both in Brooklyn, New York—and Max Hirsch, 2056 Ryer avenue, New York City. To manufacture rubber goods, etc.

Rubber Refining Co., Inc., March 25, 1914; under the laws of New York; authorized capital, $20,000. Incorporators: Richard A. Silberhorn, 443 East Third street, Mt. Vernon, New York; John J. Hanrahan, 69 Morningside avenue, Yonkers, New York, and Alfred R. Bunnell, 60 State street, East Orange, New Jersey.

Tire Supply Association, Inc., The, February 25, 1914; under the laws of Minnesota; authorized capital, $50,000. Incorporators: Mose J. Rosenstein, Louis S. Rosenstein, Louis Rosenthal and Abe W. Juster—all of Minneapolis, Minnesota. To carry on a general automobile tire and accessory business.

Trautwein Tire & Repair Co., Inc., April 22, 1914; under the laws of New York; authorized capital, $10,000. Incorporators: Walter Trautwein and Otto Trautwein—both of 567 Morgan avenue—and Frederick Trautwein, 569 Morgan avenue—all in Brooklyn, New York.

United Anchor Tire Co., Inc., April 3, 1914; under the laws of New York; authorized capital, $2,000. Incorporators: Robt. C. Schlesinger, 155 West Seventy-Third street; Frank H. Gross, King Edward Hotel, and George Roots, 1650 Broadway—all in New York City. Auto tires, etc.

United Tire and Rubber Works, Inc., The, April 18, 1914; under the laws of New York; authorized capital, $5,000. Incorporators: Aram Saraydarian, 177 East Seventy-Fifth street. Vincent Yardum, 65 West Ninety-First street, and Henry J. O'Connor, 1517 Avenue A—all in New York City.

TO FLY AROUND THE WORLD.

The most interesting enterprise in aviation yet undertaken will be inaugurated in May, 1915, at the exposition grounds in San Francisco. This is nothing less than a flight around the world, an enormous prize—$300,000—going to the airman who completes the trip and gets back to San Francisco first. In order that those who enter the competition may fly over land as much as possible, the flight, starting at San Francisco, is straight across the continent to New York, thence northeast to Labrador, to Greenland, where the longest jump over the water occurs in the flight from Cape Farewell to Iceland. From Iceland the course is southeast to England, thence to Paris, Berlin, Warsaw and St. Petersburg. Then comes the long stretch over the steppes of Siberia to Harbin and Vladivostok; then across to Japan, up to Kamchatka, across to Alaska and down the Pacific coast to San Francisco. There will be 26 stations where the aviators must stop and report, and where they can get necessary supplies and equipment.

THE CHESTER RUBBER COMPANY READY TO START.

The Chester Rubber, Tire & Tube Co., of Chester, West Virginia, has installed its machinery, and is ready to begin operations at once, with George E. Knowles as general manager. The John E. Thropp system of making wrapped tread tires has been put in, and in addition to that the factory has an equipment for making inner tubes and re-liners, tubing and mold work. It will begin with about 70 employes, but it expects to increase this number by 100 within a short time. The capital stock is held by residents of Chester, and their expectation is that that town will soon be well known among tire consumers.

TIRES BY PARCEL POST.

By a new ruling of the Post Office Department it is now possible to send automobile tires by parcel post. Former measurements of a pneumatic tire amounted to practically three times the diameter of the tire, whereas according to this latest ruling, in the cases of tires simply wrapped, with an open space in the center, the outside diameter shall be considered the length, and the circumference of the tubing as the girth; while in measuring tires packed solidly, without clear space in the center, the diameter of the parcel shall be considered the length and twice the diameter and thickness as the girth.

TRADE NEWS NOTES.

THE INDIA RUBBER WORLD has always prided itself on the accuracy of the statements appearing in its columns, but of course, with a large number of correspondents scattered around over the world—all human—occasionally some inaccuracy will creep in, the only remedy for which is an early correction. In the letter from Akron in our April issue there was a statement to the effect that a trustee in bankruptcy had been appointed for the Akron Rubber Mold & Machine Co. This item, we are very glad to say, was untrue, the correspondent having a totally different company but with a somewhat similar name in mind. The Akron Rubber Mold & Machine Co., according to all advices, is in an exceptionally prosperous condition and is rapidly extending its business and its factory facilities.

Gove & French, Inc., crude rubber brokers, have moved their New York Office to the new Arcade Building 25 Beaver street.

The New York Mackintosh Co., of Mamaroneck, New York, is making extensive additions to its factory.

The report of the Canadian Consolidated Rubber Co., Ltd., shows, for the year ended December 31, 1913, an operating profit of $910,770, on net sales of $6,788,858, the profit and loss surplus being given as $2,129,639, and the surplus after dividends $139,742.

The Thermoid Rubber Co., of Trenton, has opened a factory branch in Indianapolis, Indiana, which will carry a complete line of "Nassau" casings and tubes and Thermoid brake lining.

H. Muehlstein & Co. have removed their New York offices and warehouse to their new building, 391-395 Washington street, and 31-33 Hubert street.

The Vermont Tire & Rubber Co.—Fred A. Millan manager—has established a sales room and repair department at Barre, Vermont, where, in addition to Diamond tires, for which it has secured the state agency, a complete line of United States, Goodrich and Goodyear tires will be carried in stock.

The George W. Moore Co., manufacturers of elastic fabrics, have recently purchased land adjoining the property now occupied for this purpose and formerly owned by the Westerly Narrow Fabric Co., on Beach street, Norwalk, Connecticut, increasing the holdings of the company to ten acres. It is understood that this property is soon to be improved, not only in the way of factory development but also by the erection of homes for the factory workers, this course having been suggested as a possible solution of the problem that confronts this company's employes in their search for suitable near-by homes.

Bids submitted on fire hose have resulted during the past month in the following awards: Boston Woven Hose & Rubber Co., 500 feet (Urbana, Ohio); Eureka Fire Hose Co., 1,000 feet (Le Roy, N. Y.); 300 feet (Miners Mills, Pa.); Fabric Fire Hose Co., 1,500 feet (Clarksburg, W. Va.); 500 feet (Chestertown, Md.); 300 feet (Glenville, W. Va.); 300 feet (Red Lion, Pa.); 200 feet (Miners Mills, Pa.); Manhattan Rubber Manufacturing Co., 3,200 feet (Peoria, Ill.); United & Globe Rubber Cos., 5,000 feet (Pittsburgh, Pa.).

J. W. Johnson, of New Brunswick, New Jersey, formerly vice-president of the Lee Tire & Rubber Co., of Conshohocken, Pennsylvania, has been elected to the presidency of that company, succeeding J. Ellwood Lee, who died on April 9. Arthur A. Gaithwaite, son-in-law of the late Mr. Lee, succeeds Mr. Johnson as vice-president.

The American Can Co., 435 West 14th street, New York, is making a small compact adding machine, called the American adding machine, which it sells at a very moderate figure. It is simple and accurate and of course a great time saver.

A "NOBBY TREAD" OF UNUSUAL SIZE.

The United States Tire Co. some little time ago received an order from the Syracuse Rubber Co. for a special "Nobby Tread" tire for exhibition at an industrial show which was to have been held in Syracuse. This enterprise being abandoned, the company has been exhibiting the tire in its show room, where it has attracted considerable attention. It is 38 x 8 in. in size, the largest tire made, being intended for use on fire apparatus and for motor vehicles of great weight, the casing weighing 200 pounds, the tire taking a pressure of 160 pounds and being capable of carrying a weight of 4,000 pounds per tire.

STAMP MANUFACTURERS TO HOLD CONVENTION.

The International Stamp Manufacturers' Association is to hold its annual convention this year at Buffalo, New York, from June 16 to 18, the Hotel Statler having been selected as the meeting place.

THE MIDGLEY COMPANY TO MANUFACTURE TIRES.

The Midgley Tire & Rubber Co., incorporated on January 24, as previously mentioned in our columns, for the manufacture of automobile casings and tubes, has secured the factory at Lancaster, Ohio, formerly occupied by the Ohio Flint Glass Co. This factory contains 200,000 square feet of floor space and requires only slight alterations to put it in excellent shape for a tire factory, and the company expects to have its first tires on the market in September. It will make as a leader the old Midgley tread formerly made by the Hartford Rubber Works, of Hartford, Connecticut, also a regular line of casings in both Dunlop and Q. D. types. Thomas Midgley, who for the past ten years has been connected with the United States Tire Co. and its allied factories, will be general manager and have charge of production, and Harry Davis is president of the company, which is capitalized at $550,000.

A NEW INDUSTRY FOR WINNIPAUK.

The Norwalk Tire & Rubber Co., Inc., filed certificate with the secretary of the state of Connecticut on March 23, the incorporators being Earle Banks, John Pierce and Sayer Young—all of Norwalk—and the capitalization $1,500,000, of which $200,000 is said to be paid in. The stock of the company is divided into 5,000 shares of preferred and 10,000 shares of common. The principal office and place of business is at Norwalk, Connecticut, and the plant formerly occupied by the Norwalk Woolen Mills, at Winnipauk, has been secured for manufacturing purposes, at what is described by William B. Miller, president of the company, as "a very low price," this plant being equipped with both steam and water power, located on the Norwalk river and on the Danbury branch of the N. Y., N. H. and Hartford R. R. and enjoying splendid shipping facilities. This company, Mr. Miller states, "will manufacture pneumatic tires and anything else that is profitable."

Organization was perfected and certificates filed on March 28. The officers of the company are: President, William B. Miller, formerly of the Diamond Rubber Co.; vice-president, Dr. David Spence, a chemist formerly associated with the B. F. Goodrich Co.; secretary and treasurer, Frederick L. Lambson, also formerly with the Goodrich company. The board of directors, composed of seven members, includes the above three in addition to Lewis B. Arnold, of Akron—John Ingraham, William Hunter and a Mr. Deremer—all of New York. C. E. Mathewson, who on March 21 resigned his position as sales manager of the Diamond Tire Co.'s Pacific Coast branches, is said to have been appointed sales manager, while Dr. W. F. Russell, formerly employed in the chemical research laboratory of the Goodrich company, is also reported as being identified with this new enterprise. It is not expected that the plant will be in operation before the middle of May.

TRADE OPPORTUNITIES IN CONSULAR REPORTS.

A REPORT from an American consul in Great Britain states that a town council in his district has decided to spend about $7,500 in acquiring a fire engine and equipment. American manufacturers should communicate with either the town clerk or the superintendent of the fire brigade. Information regarding this opportunity may be obtained upon application to the Bureau of Foreign and Domestic Commerce, Washington, or to any of its branches. Report No. 12,779.

A business man in a European country informs an American consular officer that he desires to be placed in communication with American manufacturers of electric cables and electric tape, with a view to importing these materials. This merchant has an office in the United States, and correspondence, in English, should be sent to said office. Report No. 12,791.

A report from an American consular officer states that a local municipality will probably ask for bids shortly on about 80 motor busses. The particulars of the contract are not yet obtainable, but bids must be filed within six weeks of being called for. As this will not allow sufficient time for particulars to be sent to the United States and bids to be returned, the consular officer will be glad to furnish particulars to any European agencies of American automobile factories that would care to submit bids. Report No. 12,800.

An American consul reports that a prominent wheelwright in a North American city is desirous of receiving from manufacturers in the eastern part of the United States catalogues and price lists of hubs, wheels, tires and other parts for vehicle construction. Report No. 12,815.

An American consular officer in the West Indies reports that he has received a request for catalogues of motor cycles, motorcycle tires and accessories. It is imperative that the catalogues contain lowest export prices. The inquirer is interested in the formation of a firm to do a wholesale business in these goods throughout the island in question. Report No. 12,832.

An inquiry has been received at an American consulate for the names of American manufacturers of pneumatic-tired sulkies with wire wheels used for trotting and pacing horses. The inquiry was made to secure one for trial with the view to later possibly sending orders for the same. Report No. 12,859.

PROPOSAL FOR GOVERNMENT SUPPLIES.

The Bureau of Supplies and Accounts, Navy Department, Washington, D. C., will receive bids until May 5 for furnishing the following supplies: Schedule 6627, air hose and unlined linen fire hose; schedule 6629, flexible copper metallic hose.

INJUNCTIONS AGAINST VULCANIZER MAKERS.

The Adamson Manufacturing Co., of East Palestine, Ohio, was granted an injunction on March 24 by Judge Day of the United States District Court at Cleveland, Ohio, against the Lazarus Manufacturing Co. The decree enjoins the defendants from making or selling vulcanizers for tires or tubes embodying the principle of the Adamson vulcanizer covered by patent No. 1,057,911.

This injunction adds to a series of legal victories recently achieved by the Adamson company. On December 17, 1913, an injunction was issued by Judge Geiger of the United States District Court at Milwaukee, against the C. A. Shaler Co., restraining it from making or selling portable tire vulcanizers covered by the patent mentioned above. Again, on January 26 of the present year, Judge Dyer of the United States District Court at St. Louis, Missouri, upheld the Adamson patent as valid and signed a decree granting a permanent injunction and an accounting against the Gilliland Auto Supply Co.

New Rubber Goods in the Market.

RUBBER AS AN ARTFUL AID TO TEMPERANCE.

WE staid Americans are rather fond of referring to the French as frothy and frivolous, but a recent Parisian invention shows that the French are not only exceedingly ingenious, but are essentially Puritanical. This invention is nothing less than a drinking cane, intended to come to the assistance of its owner when too grievously tempted. It looks like any other plain wood crook-handled walking stick, except that a few inches below the crook there is a little lever. But this is not the usual walking stick—far from it; for it is hollow and contains a rubber tube reaching from the ferrule to the end of the crook, which is open. By working the lever up and down a few times a vacuum is formed, and the stick is instantly converted into a siphon. When a man is invited to drink and prefers not to, or is urged after he feels that he has had all his temperament requires, he deftly inserts the end of the crook into the seductive cocktail or the rejuvenating highball, or whatever it may be, lowers the lever two or three times, and the liquid glides smoothly and silently down into the stick. This can be repeated as often as the glass is filled, the stick having capacity for a number of drinks. When the stick becomes loaded it can be carried quietly to some unobserved place, a screw removed from the bottom, the contents released, and the cane instantly sobered up again.

The possibilities of this great invention are obvious; but, singularly enough, careful examination of customs figures fails to reveal any large importations into this country up to the present time.

SHIRTS AND SLEEVES OF RUBBER.

Baseball players who at the opening of the season or in preliminary practice are required to reduce weight, find the rubber shirt an excellent aid in arriving at the desired slenderness, as well as effective protection against muscular colds, while the use of rubber sleeves prevents the arms from becoming sore, as they otherwise so frequently do in spring training. These rubber shirts and sleeves should be worn over undergarments of worsted, which absorb the perspiration. Compared with the advantages afforded by their use, their price is reasonable. [A. J. Reach Co., Philadelphia.]

HEATING APPARATUS FOR WATER BOTTLES.

A patent was recently issued on an invention, the use of which in connection with the hot water bottle is bound to increase the popularity of the latter article, being a heating apparatus capable of regulation to keep the water at any desired temperature. It consists of a flexible core wound with a heating coil and surrounded by a flexible casing, which is inserted in the ordinary rubber water bottle, this device having a threaded ring which engages with the ring in the neck of the water bag in the usual manner and being supplied with means for electrical connection. The attachment for controlling the heat supply is at such distance from the water bag that it can be reached without inconvenience to the user or without any disarrangement of the coverings.

THE SANITARY ERASER.

While the rubber eraser can scarcely be said to be a new invention, the one here illustrated has the novel feature of being encased in a holder which by pressing at the loop end feeds down clean rubber until the supply is exhausted. The support of the casing permits of the use of a strip of rubber only one-eighth of an inch thick, which will erase one letter without injury to those on either side, as is liable to happen when the ordinary thick rubber eraser is used. Two rubbers of best quality are offered in this form, one for typewriter and ink and the other for pencil. [The O. K. Manufacturing Co., Syracuse, New York.]

A RUNNING-BOARD FOOT-MAT.

A rubber foot-mat inserted in the running-board of an automobile seems to serve a logical purpose, and a Boston house has recently been showing some running-boards thus equipped. The mat consists of rubber strips about 1¼ inches deep, held in upright position and kept at proper distances by corrugated aluminum separators. There are many occasions when, as one enters a car, it is highly desirable that he should clean the mud from his feet, and with this sort of running-board he can do so; and when there is no mud to clean from his feet this mat serves as a satisfactory non-slip tread. [Linscott Supply Co., Boston, Massachusetts.]

NEW GLOVE PUMPS.

The India Rubber Glove Manufacturing Co. has always been famous for the appearance and quality of its footwear. It has just added to its line two new pumps, with canvas uppers and rubber soles. As will be seen by the accompanying cuts these are trim looking shoes, and they are made still more attractive in appearance by the ornamental bow across the vamp. These pumps are made both in white and black, and in men's sizes from 5 to 11, in women's sizes from 1 to 8, both men's and women's being made in three widths. Formerly, in the days of the decorous and orderly waltz, no one would have thought of dancing on rubber soles, but times have changed, and to do the current dances one requires a tenacious hold on the floor, which is provided by shoes like these. But apart from the Tango and the Maxixe, these shoes are serviceable in yachting and boating and for dress-up seaside occasions generally.

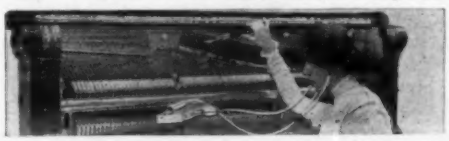
Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

RUBBER IN THEATRICAL MAKE-UP.

In theatrical parts which call for enlarged heads this effect has in the past generally been accomplished by the use of a padded wig—an accessory extremely uncomfortable because of its warmth. But a decided improvement on this make-up has been devised by a young actor—Cavendish Morton—who uses in place of the padded wig a combination of rubberized silk bags inflated with cooled air. The illustration herewith shows one of these rubberized bags in use, with wig attached, and another in position to form fat cheeks and double chin, the edges of the bag being joined around the eyes, nose and mouth with spirit gum, and the size of the features to be regulated by a draw string which controls the amount of inflation. Nose paste, coloring matter, beard, etc., are then added, to complete the effect called for by the role to be enacted.

THE TUNE-A-PHONE.

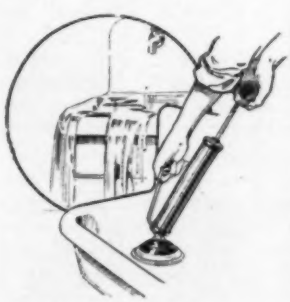
In the correspondence course of instruction in piano tuning now being offered by an established school, incorporated under the laws of the state in which it is located, the use of the Tune-a-Phone plays an essential part. This is a duly patented device, and, as shown in the illustration, it is provided with



rubber tubes which extend from the instrument to the ears of the learner. It is not intended as a permanent requirement but may be dispensed with after the course is completed, being intended for purposes of demonstration where correct impressions cannot be conveyed by correspondence. [Niles Bryant School, Art Inst., Battle Creek, Michigan.]

A LIFT AND FORCE PUMP WITH RUBBER PARTS.

This pump is not extremely new—as a matter of fact it is in use quite extensively—but it is an interesting little device, and depends largely for its success on its various rubber parts. It is a lift and force pump for cleaning out stopped-up kitchen sinks, wash basins, bath tubs, lavatories, etc., and does this work very effectively, tho it is quite an inexpensive apparatus, not costing very much more than it does to have the plumber in for a few minutes. The cylinder is made of brass, but molded rubber is used for the lift and force cup, and for the adjustable washer. [The Little Giant Household Pump Co., Philadelphia, Pennsylvania.]



LITTLE GIANT PUMP.

In selling rubber hot water bottles it is suggested that the customer be advised to use a funnel when pouring very hot water into the bag, thus preventing the water from striking it at the neck, which is where the first leak usually occurs. The sides of the bag should also be prevented from sticking together, as often happens when put away damp, by being inflated with air.

GASOLENE MOTOR TRUCKS.

According to reliable estimates, there are now approximately 85,000 gasolene trucks being used in the United States. Nor is this mere guesswork. The number in 1910 was 10,374. Combining with this figure the output of 1911 of 8,500 and that of 1912 of 27,900 a total is obtained of 46,774. By adding the estimated production of 1913 of 40,000, an approximate total is obtained for the present time of about 85,000 trucks. Some estimates places the number as high as 100,000. At any rate, the production for 1913 was apparently almost equal to the number in use at the beginning of that year.

There are estimated to be about 274 concerns engaged in the manufacture of gasolene trucks in America. Sixty of these produce 90 per cent. of the trucks made, while the remaining couple of hundred are small makers, with an average output of only 15 to 20 trucks a season. The states with the largest numbers of truck manufacturers are: Michigan, 41; New York, 36; Ohio, 32; Illinois, 25; Pennsylvania, 19; Indiana, 12; Wisconsin, 11; Missouri, 10; California, 8. Thus 194 factories out of 274 are divided among 19 states.

By a recent canvass of the truck manufacturing industry on the part of "The Automobile," the year 1913, in spite of industrial retrenchments, was shown to be a satisfactory one for the motor truck industry. The experience of 60 leading firms showed gains of from 12 per cent. to 600 per cent.

In no instance has any decrease been reported. One company building 6 models had a 30 per cent. increase as compared with 1912, while another which makes a single model in quantities above 1,000 reports an increase of 70 per cent. over the preceding year. A Pacific Coast manufacturer records 100 per cent. increase and two Michigan concerns have augmented their business, respectively, 25 and 50 per cent.

The following 20 cities, in the order named, were the largest consumers during 1913 of the trucks made by 100 manufacturers:

New York, Chicago, Boston, San Francisco, Los Angeles, Buffalo, Pittsburgh, Philadelphia, Cleveland, Kansas City, St. Louis, Portland (Oregon), Milwaukee, Seattle, Toledo, Cincinnati, Indianapolis, Rochester, Minneapolis and Detroit.

Some of the less populated cities have evidently been extending the use of motor trucks for the delivery of household goods in residential quarters.

The industries which have been the largest users of motor trucks have been in the first place general trucking, followed by the wholesale and retail grocery and produce trade. Other heavy purchasers of trucks have been breweries, liquor dealers, coal and ice companies, oil concerns and public utilities.

The popularity of solid tires for motor trucks is exemplified by the fact that out of 306 specifications for 1914, published in "The Automobile," all except about 40 include solid tires.

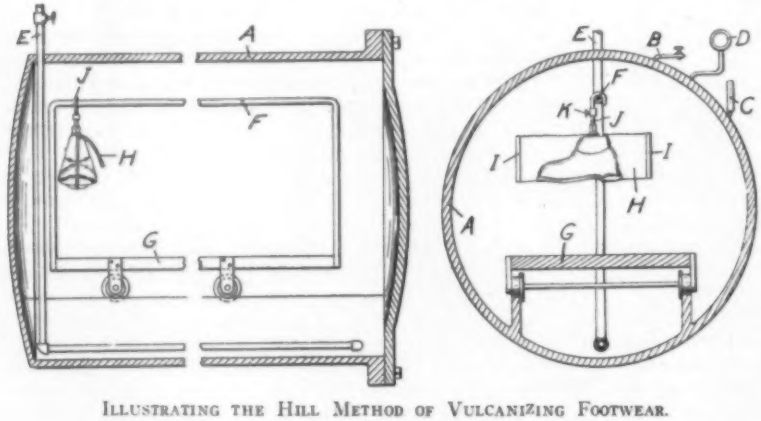
THE RUBBER TIRED MOTOR TRUCK TO REDUCE THE COST OF FARM PRODUCE.

That a reduction in the cost of farm produce to city dwellers within the next few years is possible and not entirely improbable is the prophecy made by C. W. Martin, manager of the motor truck tire department of the Goodyear Tire & Rubber Co., of Akron. This expectation is based on the advantages which the motor truck affords the farmer for the profitable marketing of his produce over the old method of horse-drawn vehicles, and the availability, through the adoption of this plan, of a much greater source of supply. Mr. Martin cites, as an instance of how firmly this mode of produce marketing has become established, the formation in the west of a truck club, the intention of which is to operate a line of motor trucks in competition with the railroads, claiming ability to give better service at a minimum cost.

New Machines and Appliances.

A NEW METHOD OF VULCANIZING FOOTWEAR.

THE dry heat process is the one in common use for vulcanizing footwear and similar rubber goods, and the time consumed is from 6 to 8 hours. The trouble with the dry heat process, where air is confined with the rubber goods, is the oxidizing which takes place. Again, with the open steam process, employed chiefly in making mechanical goods, the moisture has a bad effect upon the fabric lining and also injures the rubber surface by causing it to be pitted. Those processes which utilize certain gases under pressure to drive out air are often expensive.

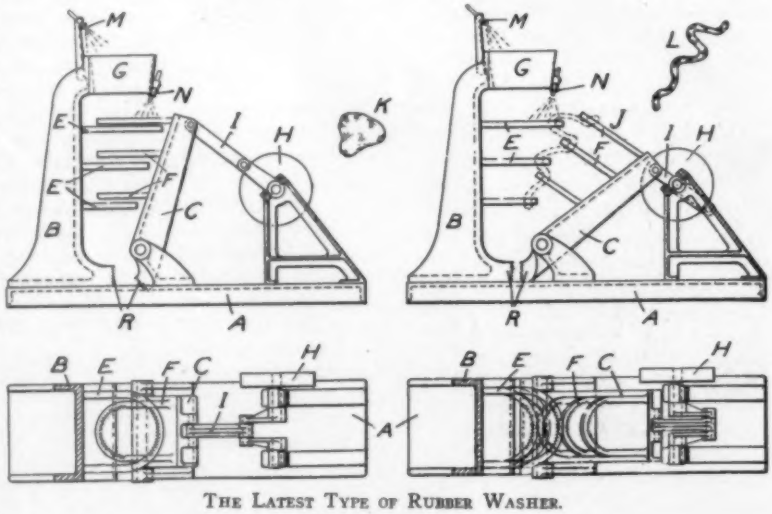


ILLUSTRATING THE HILL METHOD OF VULCANIZING FOOTWEAR.

According to a new invention, which is illustrated herewith, the objectionable features in the processes mentioned above are eliminated. By this new process the oxygen of the air is excluded almost entirely from the goods while they are being vulcanized. The feature of this invention is a thin rubber and fabric envelope which fits over the shoe, and from which the air is extracted to make it conform to the outline of the shoe. Referring to the drawings, which show a longitudinal and a cross section of an ordinary steam cylinder vulcanizer, *A* represents a vulcanizer provided with an escape valve *B* to allow the escape of air as the steam enters. The usual thermometer *C* and steam gage *D* are also provided. The steam enters at *E* and condensation is taken care of in the usual manner. The rubber shoes to be vulcanized are placed on the lasts and suspended by hooks on a rod *F* of the roller carriage *G*. With this new process the shoe is placed on its last and enclosed in a thin envelope *H*. This is closed at the ends by means of metal clamps *I;* and the opening in the top, which allows the pipe *J* to pass through, is closed by means of a washer clamped tightly against the envelope by means of a set screw or nut fitting around the pipe. When the envelope is thus tightly sealed the valve *K* is opened and the end of the hooked pipe *J* is connected with an air pump and the air extracted from the envelope through a hole in the lower end of the pipe inside the envelope. As the air is extracted the operator smoothes the envelope out to remove wrinkles, so that it conforms exactly to the outline of the shoe, and so that the line where the two sides of the envelope meet will lie along the center line of the shoe. When a vacuum of 21 inches, or 10 pounds pressure, is obtained the valve *K* is closed. When the rod *F* of the carriage is filled with rubber shoes, thus prepared and suspended on the rod *F* by the hooked pipes *J*, the carriage is run into the vulcanizer and the door is closed. The thin rubber and fabric envelopes allow the shoes to be surrounded by live steam, but prevent the rubber from coming in direct contact with the steam. They also exclude the oxygen of the air and prevent oxidizing of the rubber. By this method the shoes are vulcanized in about two hours. [U. S. Patent No. 1,090,535, granted to Wm. G. Hill and assigned to the Apsley Rubber Co., Hudson, Massachusetts.]

AN INNOVATION IN RUBBER WASHERS.

Except in those cases where tub washers are used, crude rubber containing sand, dirt, etc., is passed between the crushing rolls of the ordinary roll washer without preliminary treatment, to remove the foreign matter. The machine illustrated in the accompanying drawings, and which has just been patented in this country, is of somewhat unusual construction. Upon the bed plate *A* are mounted two frames *B* and *C*. The former is rigidly attached, while the latter is pivoted at its lower end. Each of these frames has a series of jaws *E* and *F* extending towards each other as shown. These jaws are U-shaped and are provided with teeth as shown in the plan views of the machine. When the frames *B* and *C* are at their minimum distance apart, as shown in the first drawing, the toothed portions of the jaws *E* and *F* form opposite sides of an almost circular passage through which the rubber descends from a hopper *G* in the upper part of the frame *B*. When the frame *C* is set in motion, by means of power applied to the pulley *H* and communicated to the frame through the connecting rod *I*, the jaws *F* are forced back as indicated at *J*, so that a lump of rubber of the shape shown at *K* will be stretched into a thin and corrugated sheet as indicated at *L*. As the crank shaft continues to revolve, the rubber sheet becomes thinner as it descends between the jaws. During this operation water is impinged against the rubber from nozzles *M* and *N*. At the lower ends of the frames *B* and *C* are corrugated jaws *R*, which are opened and closed by the move-

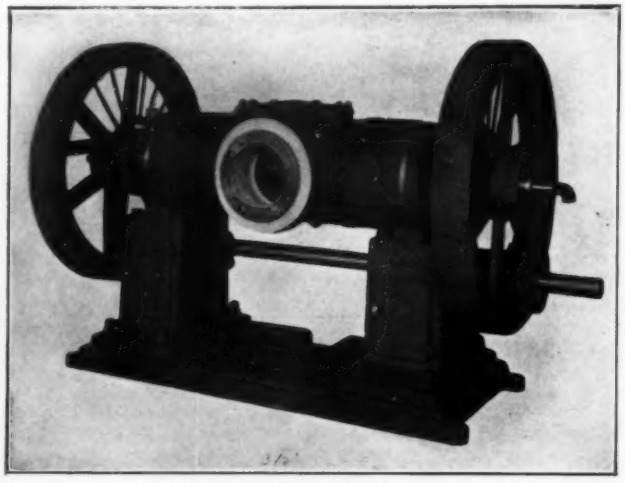


THE LATEST TYPE OF RUBBER WASHER.

ment of the frame *C* and act to crush the rubber after it has passed through the stretching jaws *E* and *F*. The action of the machine tears the rubber so as to free the foreign matter, which is then easily washed away by the water running over it from above. [U. S. Patent No. 1,089,162, granted to William R. Smith, of Buffalo, New York.]

THE ALLEN DOUBLE TUBING MACHINE.

The Allen Double Tubing Machine made in Erie, Pennsylvania, by the Allen Machine Co., possesses many features which commend it to the appreciation of rubber manufacturers. Among the merits claimed for it is the omission of the end thrust, and also that its use makes possible a 100 per cent. increase in output

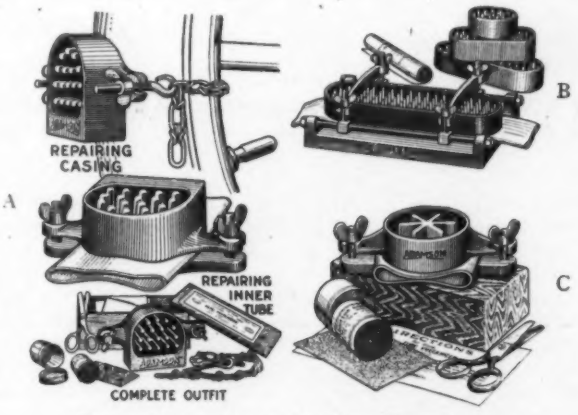


DOUBLE TUBING MACHINE.

per cylinder bore over any single-type machine. It is further claimed that the Allen tubing machine shows greater output per horsepower. The worm of this machine is cut from a solid steel forging, is bored for water circulation and is guaranteed to have fewer defects than could possibly be the case were an ordinary casting used.

VULCANIZERS FOR THE CAR OWNER.

Three different styles of vulcanizers for the repair of tires and inner tubes are shown in the illustrations herewith. These repair outfits represent the type of vulcanizer which was first introduced about two years ago, and which has found a wide use in garages and among automobile owners who do their own repairing. The first illustration, *A*, shows a complete outfit for repairing both casings and inner tubes. To use this vulcanizer the cup is attached by means of the chain or clamp, according to whether a tire or tube is to be repaired, and gasolene is poured into the cup to a certain depth according to directions. The gasolene is then lighted and allowed to burn itself out. The amount of fuel is calculated so that the time required to consume it will ensure complete vulcanization. With this outfit a quantity of repair gum, measuring cup, shears, emery paper, etc., are supplied. Another style of vulcanizer operating on the same principle, is shown by *B*. This outfit is designed for the repair of inner tubes. Four different sizes of cups are supplied for attachment to the adjustable clamp, and cuts up to 12 inches in length may be repaired in 15 to 20 minutes. The projections cast in the bottom of the cups serve to conduct heat from the burning gasolene to the vulcanizing plate at the bottom. A third style of vulcanizer, shown by *C*, is designed especially for repairing motor cycle and cycle-car tubes, as well as the smaller sizes of tubes such as are used on Ford cars. The principle of operation is the same as in those described above. The repair gum is placed over the cut on the tube, the vulcanizer is clamped



THREE STYLES OF THE ADAMSON VULCANIZER.

in place, and gasolene is poured into the cup and lighted, thus effecting the cure in about 15 minutes. [Adamson Manufacturing Co., East Palestine, Ohio.]

FORD WILL CONSERVE MORE WASTE ENERGY.

Only a few weeks ago Henry Ford, the world's most famous automobile manufacturer, startled the industrial world by the announcement of his intention to share the profits of his business with the employes of the factory. Manufacturers and others interested in the automobile trade were not through discussing the *pros* and *cons* of this revolutionizing plan when Mr. Ford made another announcement which is equally as surprising and which, if the experiment proves a success, may result in a radical change in the development of power in all plants which are operating under the present inefficient systems of power development.

This time Mr. Ford announces that he will spend $1,000,000 in the erection of a new power plant and in the installation of a new type of engine. He proposes to harness steam power and gas power together in a gigantic set of units and thereby convert the energy which at present goes up the chimney into useful work. The new power units will comprise three large gas engines, the waste heat from which will be used to develop steam to operate a fourth engine. These four engines will cost about $600,000, and each will develop 7,000 horsepower. The new power station will cost $150,000, and the steam generators will cost $250,000, bringing the total expense of the new experiment up to the million mark. The effect of developing steam from the waste heat of the gas engines and converting this steam into useful energy is the same as if the waste heat developed in the radiator of the automobile were used to do some practical work.

It is reported that the new engines are to be built by the Crocker-Wheeler Co., of Ampere, New Jersey, and some idea of their enormous size may be gained from the fact that it will be necessary to build them in sections so that they will clear the bridges and tunnels on the railway lines over which they will be shipped to the Ford plant in Detroit.

The increased power which will be realized with the installation of this new plant is made necessary because of many additions to the Ford factory, and also because of the termination of relations with Dodge Bros., who have held contracts for making certain parts of Ford motors for many years.

This development of the Ford factory means that there is to be no decrease in the production of cars, and it may even mean a greatly increased output after the installation of the new units. This, of course, means more tires and a greater consumption of rubber.

The India Rubber Trade in Great Britain.

By Our Regular Correspondent.

NEW WORKS.

DURING March a somewhat lengthy report was published in a Manchester paper to the effect that the Leyland and Birmingham Rubber Co. had bought the new but never used works of the Bradford Dyers' Combine at Handforth, Cheshire, for the purposes of a branch factory; and the importance of this new industry to a rural district was pointed out in glowing terms. Now, as far as the Leyland company is concerned, the report is erroneous, as they have no intention of starting another factory. The real facts of the case are that T. H. Roberts, chairman of the Wood-Milne Co., Limited, of Leyland, in association with some of his friends, has arranged to finance the manufacture on a large scale of a product invented by Robert Russell and developed by Mr. Metcalfe, of the Maroro Rubber Works, Brimscombe, near Gloucester. This product is variously referred to as synthetic, artificial and reclaimed rubber —terms which, of course, are by no means synonymous.

In the absence of authenticity as to the sample I have inspected, I shall not on the present occasion say more than that if it was really made from wood, the discovery and manufacture are likely to prove of the very highest importance. A report has been sedulously circulated to the effect that Charles Macintosh & Co. are largely interested in the new venture, but this I am authoritatively informed is not the case. The works which Mr. Roberts has taken, and the price of which is stated to be £73,000, are situated about fourteen miles from Manchester and are quite extensive, being nearly one-quarter mile long by 90 yards wide; and altho employment will not be found for 600 rubber workers, as foreshadowed in the press, yet they will of course add to the commercial importance of the district. As it seems to be supposed by many people that this new concern is in connection with the Synthetic Products Co., Limited, with which Professsor Perkin and Sir W. Ramsay are associated, I may say that there is no connection whatever between the two concerns.

PERSONAL MENTION.

Mr. Walter Wild, who has for some years been works manager for the Wood-Milne Co., Limited, at Leyland, has resigned his position and is at present engaged in an agency business of his own for raw and reclaimed rubbers, a branch in which he has previously had considerable experience.

Mr. James Tinto, managing director of the Irwell and Eastern Rubber Works, Limited, Manchester, has returned from an extended business trip through the United States and Canada. In the course of a few observations he said that there was practically no difference between the machinery made and used in America and that to be seen in British works; where the Americans had an advantage was that their buildings were mostly of one story, and that the factories had plenty of ground in reserve whereby extensions could be cheaply made; that with the majority of British works, situated in urban areas, any extension was apt to prove a costly matter, the price of the adjacent land being in many cases prohibitive even if negotiations could be entertained at all.

Mr. F. J. S. Gray, late works manager of the Gorton Rubber Co., is at present on the traveling staff of the St. Helens Cable & Rubber Co., Limited, of Warrington. Mr. Gray has an intimace knowledge of rubber manufacture, having gone to the Gorton works from the Aston Cross works of the Dunlop Rubber Co., where he was under-manager for fourteen years. E. S. Gray, his brother, is now under-manager at the works of the Rubber Regenerating Co., Limited, Trafford Park, Manchester. He was manager for the Mersey Reclaiming Co., Limited, of Stockport, until the fire of about a year ago put an end to that business. He had previously had experience in reclaiming in America.

Hampson Brothers, Limited, of Clayton Lane, Manchester, are now making a specialty of machinery for rubber manufacturers and plantations. The name will be familiar to many in the rubber trade, as their late father was for many years managing director of the Castle Rubber Co., Limited, of Warrington.

Lieutenant-Colonel T. A. Fallows, T. D., has been appointed commanding officer of the Eighth Lancashire Fusiliers (Territorials). In business life he is well known in rubber circles, as commercial manager of the Leyland and Birmingham Rubber Co., at the Leyland works.

GORTON RUBBER WORKS.

These works were sold piecemeal by auction on April 1 and 2. The 335 lots attracted a large number of buyers, and satisfactory prices were generally obtained. A good deal of the machinery was of quite recent erection; but, making all allowance for this fact, the prices obtained in most cases were surprisingly good, the buyers being rubber machinists who were present in force. Those who went from rubber works to pick up bargains expressed themselves as disappointed with the sale. The proceeds are hardly likely to cover the debentures fully, and there is no prospect of any return to the shareholders.

RUBBER LITERATURE.

"Rubber, Its Sources, Cultivation and Preparation," by Harold Brown, technical superintendent of the Imperial Institute, London, has a preface by Professor Wyndham Dunstan, who reiterates his opinion that plantation rubber which can be profitably sold at less than 2*s.* per pound has little to fear from the competition of the synthetic material. This book will be found useful by a good many people who wish to be up to date with regard to the sources of raw rubber. A special feature is the copious reference to West Africa, where the native collectors in the French colonies are receiving instruction either in "Rubber Schools" or by traveling instructors. Improved methods of exploiting the *Landolphia* find specific reference. The author does not give any decided personal opinion with regard to the debated question as to whether the vines should be tapped or whether they should be cut down and left to reproduce themselves in three years. The matter, it is said, is now under special notice in the French Congo, where the merits of the alternative processes will be decided. When this comes to pass, the vines, he surmises, will have ceased to be of much interest as a source of rubber.

With regard to plantation Pará, it is pointed out that chemical analysis fails to distinguish between rubber from young trees and that from old ones, tho that from the former is usually much weaker. This authoritative statement should be taken to heart by those chairmen of plantation company meetings who announce triumphantly that their chemists have found no difference between the plantation product and Fine Hard.

FIRES AT WORKS.

One of the largest fires ever known in the Manchester district occurred on Sunday, March 29, at the tar distilling works of Hardman & Holden, Limited, damage to the extent of £80,000 being done. The firm is one of the largest producers of solvent naphtha in the country. On April 2 much damage was caused by a fire at the works of the British Pluviusin Co., Limited, at Minton Green, near Manchester. The main product of manufacture is an artificial leather made with oils, rubber, acetone, benzine, etc., and the fire is said to have been caused by the sun's

rays. The company is closely connected with the old Winterbottom Book Cloth Co., of Manchester, and also has a branch in New York, called, I believe, the Fabrikoid Works.

THE PROPOSED LONDON RUBBER TRADE WAREHOUSE.

In connection with the proposed rubber trade warehouse for London, it has been estimated that the present warehouse charges on rubber arriving in London (excluding port charges) amount to about $14.50 per net ton, this being much in excess of the cost of handling the article in Liverpool and the chief foreign ports. It is expected that the quantity to be dealt with will be about 50,000 tons a year.

To encourage using the warehouse, it is proposed to distribute 25 per cent. of the surplus profits, after paying 8 per cent. on the shares, between the shareholders and the customers of the company. Encouragement and support from the rubber trade are anticipated as a consequence of this new departure in London rubber customs.

PRIZES AT THE LONDON RUBBER SHOW.

VALUABLE MEDALS FOR THE BEST RUBBER SOLES.

THERE is one competition connected with the London Rubber Exposition to be held from June 24 to July 9 next, which ought to interest a good many American rubber manufacturers, as it is a competition in the making of rubber soles. Three medals—gold, silver and bronze—together with the exhibition diploma, are offered by the Rubber Growers' Association for "the best specimen of rubber soles that can be attached by simple means to any kind of new or worn footwear." And here are the

CONDITIONS OF THE CONTEST.

1. The proportion of new rubber contained in the soles must be stated.
2. The price these soles of various sizes can be sold at retail, must be stated, and successful competitors must be prepared to supply them to retailers, to enable them to sell at the prices stated.
3. The methods of attaching the soles in the course of manufacture of the boots or shoes, shop fixing, or affixing to worn footwear, must be stated, i. e., directions given as to whether soles must be sewn, cemented or otherwise fixed to ensure their adhering properly and permanently.
4. In making the awards the judges will take into consideration the following points:
   a. Cost (combined with quality) to the public.
   b. Simple and permanent method of attaching to footwear.
5. There will be no entrance fee, and the necessary space and stand will be supplied free. During the Exhibition the competitions are under the sole control of the Exhibition Awards Committee.
6. All exhibits must be delivered, carriage paid, with the name of the competitor attached to the package containing the exhibit, as well as to the articles themselves.

Entries will close on the 1st of June next, tho exhibits will be received up to June 15. Application for entries should be sent to the Awards Committee, care A. Staines Manders, Exhibition Offices, 75, Chancery Lane, Holborn, London, E. C.

A GOLD MEDAL FOR THE BEST TROPICAL AGRICULTURAL MACHINERY.

The "Journal d'Agriculture Tropicale," of Paris, offers a gold medal for the best collection of machinery or implements necessary for the cultivation or preparation of tropical products, or for the manufacture of the raw products; or for labor saving appliances that would prove of benefit to tropical planters.

A SILVER CUP FOR THE BEST FACTORY PLAN.

The "Gummi Zeitung," published in Berlin, also offers a prize in the form of a large silver cup—illustration of which is here shown—for specific plans and illustrations of a medium-sized, modern rubber manufacturing plant intended for a varied production. The plans must show the installation of the various machines for the treatment of crude rubber, as well as for the manufacture of rubber goods; and it is hardly necessary to add that the plan must be in accordance with the latest principles of factory construction and hygiene. A technical description of the machines may be given, but the names of their manufacturers must be omitted. The specifications under this

"GUMMI-ZEITUNG" SILVER CUP.

contest should be submitted not later than May 15, and should be sent to Mr. Manders at the address before given. The award will be made at the opening of the conference—to be held in connection with the exhibition—on June 30. The jury of award in this contest will consist of two members of the editorial staff of the "Gummi Zeitung," one prominent rubber scientist and one manufacturer.

WICKHAM HARD CURE (RUBBER) PATENTS, LTD.

A company under the above style was lately registered in London, with a capital equaling $80,000. The objects include the purchase from Mr. Wickham, of a license to work his invention for the production of a "hard cure" rubber from plantation latex, the acquiring of rubber, gutta percha and other plantations and the application of this treatment to the latex obtained.

RUBBER PAVEMENTS.

Reports from London continue to record satisfaction with the experiments in rubber pavements, the section laid by Mr. Dessau at the junction of the Old and New Kent Roads having proved a great success. Though it has been in use since the beginning of last August and subjected to heavy traffic, the blocks are in as good condition as when put down. It is expected that next year some of the principal London thoroughfares will be covered with this system of road paving.

Replete with information for rubber manufacturers—Mr. Pearson's "Crude Rubber and Compounding Ingredients."

Some Rubber Interests in Europe.

CONTINENTAL CAOUTCHOUC AND GUTTA PERCHA CO., HANOVER.

THE report of the above company for the year 1913 records the exceptional movements of rubber during the year, presenting the following estimates of the world's consumption of rubber during recent years: 1908-9, 71,080 tons; 1909-10, 76,026 tons; 1910-11, 74,082 tons; 1911-12, 99,364 tons. It is added that notwithstanding the increased consumption shown as above, the future of the article is hard to predict, owing to the largely augmented imports of plantation rubber.

While Southern Kamerun has felt the effect of the low prices, it is hoped through the proposed reduction of freights and the eventual removal of the export duty to still market the rubber of that district to advantage.

Business was again extremely active in 1913, the company's turnover having largely increased, while selling prices have fallen. Night work had to be resorted to during a great part of the year in order to keep pace with demand. Ground has been secured for the erection of workmen's dwellings, while possession has been taken of the new business premises at Dresden and Munich.

The affiliated companies have been doing well, those of Paris and London paying 10 per cent., while those of Stockholm, Copenhagen, Bucharest and Milan have each distributed 5 per cent. At Paris a new factory has been erected for the production of goods hitherto imported, and involving an increase of capital by the equivalent of $200,000 to $600,000. To meet the development of the Australian trade, a new factory is likewise being erected at Sydney. Recent changes in the tariff have improved the prospects of the American trade.

The detailed accounts show gross profits, $3,092,285; net profits, $2,188,396.

THE NETHERLANDS RUBBER INDUSTRY.

There are in Holland eight rubber goods factories, of which five are somewhat important, altho the total number of workers is said not to equal that of an average-sized German plant. These factories supply only a part of the country's requirements. While this condition is partially due to the low import duty—5 per cent.—it is likewise attributed to the lack of enterprise on the part of Dutch manufacturers. Owing to the keen competition of foreign makers, domestic manufacturers have to sell with very small profits.

Among the principal Netherlands imports of rubber manufactures are balls, surgical goods of hard and soft rubber, waterproof raincoat materials, rubber shoes, etc., which are not made in Holland. Automobile tires are not yet made to any extent in Dutch factories. It is only within the last few years that some concerns have been trying to introduce an up-to-date tire.

Suggestions have been made for the erection in Holland of a modern factory for home and export trade. The American exports to that country for the fiscal year 1912 included: Belting, packing and hose, $3,830; boots and shoes (7,658 pairs), $3,442; tires for automobiles, $405; other tires, $100; other rubber goods, $42,810. Total, $50,587.

CHANGE AT HANOVER SEPARATOR WORKS.

Herr Heinrich Bormann has retired from his position as one of the business managers of the Hanover Rubber Separator Works.

NEW RUBBER DEALERS FIRM AT STOCKHOLM.

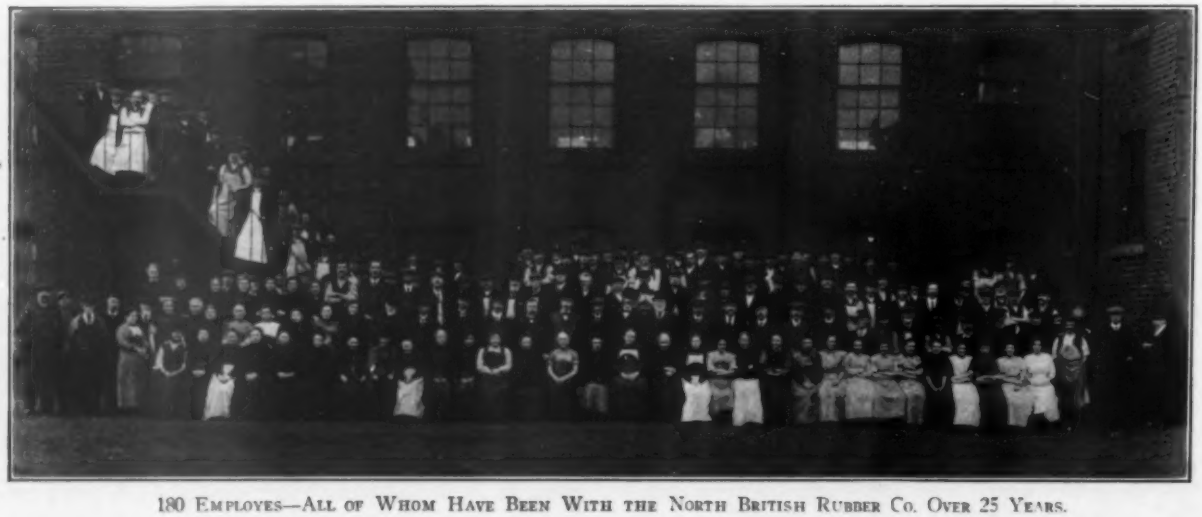
Herr G. Langborg has opened a dealers' and agency business in rubber goods at Stockholm under the registered firm names of "Gunnar Langborg, Amerikansk Gummi-Import" and "Goodyear's Generalagentur, Gunnar Langborg."

TO PREVENT LOWER PRICES FOR RUBBER GOODS.

At the annual general meeting of the United Harburg-Vienna rubber factories, it was decided to convene at an early date a meeting of delegates of rubber manufacturers to investigate the steps necessary to arrest the fall in the price of rubber goods. This reduction, it was stated, exceeded the proportionate drop in crude rubber prices.

WITH THE NORTH BRITISH RUBBER CO. 6,322 YEARS.

Here is a group picture including about 180 people who have been with the North British Rubber Co. for 6,322 years—not individually, but collectively. But they have all been with the company individually at least twenty-five years (tho some of the girls don't look it). In the group there are nine people each of whom has had over 50 years' continuous service, aggregating 535 years for the nine, and forty-three with over 40 years' service, or an aggregate of 1,919 years. Two of the women shown in the first line have been with the company each 57 years, and seven of the men in the second line have worked in this factory for terms running from 50 to 56 years.



180 EMPLOYES—ALL OF WHOM HAVE BEEN WITH THE NORTH BRITISH RUBBER CO. OVER 25 YEARS.

THE RUBBER TRADE IN JAPAN.

By Our Regular Correspondent.

JAPANESE MEDICAL RUBBER TUBING TRUST.

THERE are now five manufacturers in Japan of medical rubber tubing—Ingram Rubber Manufacturing Co., and the Kobe Rubber Manufacturing Co., Kobe; Chiyoda Rubber Co., Limited, and Kume Rubber Works, Tokio, and Kamenofuchi Rubber Works, Hyogo—their joint output being some five times that of the Ingram company, established in 1908. Japanese consumption has proved inadequate to absorb this increased production and the price gradually dropped from yen 13.50 per kilo (about $3 per pound) to yen 6.50 per kilo (about $1.50 per pound). At such a price the production of new goods has of course been impossible and it has been accepted only to clear off surplus stocks.

Under these circumstances it has been found necessary to establish the "Tohan Rubber Trading Co.," a partnership formed in February, 1914, by the five medical rubber tubing manufacturers, their agencies and nineteen traders in that branch. The project is for the five manufacturers to sell their tubing only to the trading company, directly or indirectly, the present surplus being cleared off and production reduced by two-thirds. These steps, it is anticipated, should cause the recovery of the market price to its former position.

By latest quotation the price as established by the Tohan Rubber Trading Co. is yen 9 per kilo (about $2 per pound).

JAPANESE CRUDE RUBBER IMPORTS.

	1912.		1913.	
From—	Pounds.	Value.	Pounds.	Value.
Straits Settlements...	1,214,485	$820,891	1,657,265	$885,602
British India.....	167,063	140,781	340,343	239,281
Dutch India.....	124,904	73,171	13,928	8,908
Great Britain.....	242,620	230,663	440,802	408,865
United States.....	158,176	160,556	139,624	100,112
Other countries.....	96,782	88,495	89,981	83,154
Total	2,004,030	$1,514,557	2,681,943	$1,725,922

The increase shown above, of about 33 per cent. in quantity of crude rubber imports, has been attributed to the augmented Japanese manufacture of bicycle tires as well as to the natural growth of demand stimulated by the low prices current last year, which induced speculative operations in rubber.

PRINCIPAL JAPANESE IMPORTS OF RUBBER GOODS.

	1912.		1913.	
	Pounds.	Value.	Pounds.	Value.
Soft and other rubber goods	1,543,281	$537,663	1,087,400	$418,028
Automobiles and parts.	.....	223,598	.....	555,023
Bicycles (number)....	15,540	212,317	14,870	417,525
Bicycle tires.....	491,994	556,677	428,980	519,498
Other bicycle parts...	.....	576,708	.....	649,616
Insulated wire and cables	.....	2,797,418	.....	1,031,260
Rubber boots.....	.....	21,478	.....	25,707
Overshoes	.....	21,019	.....	17,737
Waterproof tissue....	27,365	21,636	29,590	22,090
Elastic webbing, etc..	.....	83,544	.....	49,123
Insulating tape.....	245,756	76,156	185,009	57,470
Woven belting and hose for machinery.	352,114	147,601	605,676	280,392
Total	.....	$5,275,815	.....	$4,043,469

The effects of the new tariff, which went into force on July 17, 1911, are apparent in the considerable decrease in the value of imports of rubber goods for 1913 as compared with 1912, amounting to about one-fourth, and representing the development of Japanese production. In the imports of insulated wire and cables there is a notable decrease, caused by the depressed condition of the Japanese electric industry last year and the surplus production of domestic makers.

As bicycles are constructed in Japan from imported parts, the imports of the latter show an increase, while the augmented imports of automobiles and parts represent the present large demand in Japan for the article. The enlarged manufacture of bicycle tires is illustrated by the reduced imports as shown.

RUBBER NOTES FROM BRITISH GUIANA.

By Our Regular Correspondent.

ABOUT three years ago Mr. Henry Daley, then manager and local attorney of the Essequibo Rubber and Tobacco Estates, Limited, which corporation is now defunct, advocated that the Venezuelan or felling method of bleeding balata trees should be resorted to in this colony, in place of the existing system of tapping the standing trees. The proposal engendered much controversy, in the course of which Mr. Daley produced some interesting figures in support of his contention that it would be more profitable to government and licensee alike to cut down the tree and tap it once and for all rather than tap it at long intervals of about five years, and that only over half the circumference of the tree, as prescribed by the Crown Lands Regulations. He estimated that there are 5,000,000 balata trees in the colony, but admitted that this was only a guess. He suggested that a felled tree would yield 40 pounds of balata. Thus he estimated that the cutting down of all the balata trees in the colony would yield 200,000,000 pounds of balata.

In return for the concession of being allowed to cut down the trees he suggested that licensees should pay a royalty of 12 cents per pound, instead of 4 cents as at present, thus returning to the government $24,000,000. He judged that it would take 5,000 men 26 years to cut down and tap these 5,000,000 trees, the government thus getting nearly a million dollars a year in royalty, instead of $40,000 a year. The government at the time refused to grant the desired concession, and the controversy died a natural death. The new governor, Sir Walter Egerton, however, on the principle, apparently, that the proof of the pudding is in the eating, instructed his officers to experiment, with a view to ascertaining the relative values of the two methods. These officers have reported the result of their experiments, and their report reveals that the government would have been a heavy loser by permitting the wholesale destruction of the trees, and that the licensees would have been heavy losers by agreeing to pay 12 cents royalty instead of 4 cents, for the experiments have shown that the yield of a felled tree is not 40 pounds, but barely one-tenth of that amount.

THE NATURE OF THE EXPERIMENTS.

One series of experiments was conducted by C. K. Bancroft, Assistant Director of Science and Agriculture, and S. H. Bayley, superintendent of the Industrial School at the Indian Reserve, situated at the back of Onderneming School farm. The trees were growing in the forest, and were all "virgin" trees, not previously bled. They covered an area estimated at 5 square miles, and extended to 3½ miles beyond the back of the farm. Bleeding was commenced as early as possible in the morning, a greater yield being obtained at that time than during the heat of the day; and in the case of trees where latex was extracted after felling, the felling was done late in the evening and the bleeding carried out the next morning. The bleeding was conducted by a skilled bleeder of some 20 years' experience. Twenty trees were employed, grouped into four lots—A, B, C, D—numbered A1, A2, B1, B2, etc. The girth of the trees was taken at 4 feet from the ground, the standard length adopted

by the Lands and Mines Department for measuring the girths of the trees, and the distance from the lowest cut on the tree to the fork was measured. The experiment was divided into the following classes: A—trees bled by a cutlass, employing the feather-stitch pattern of cutting on one-half the circumference of the tree, as at present in use in the colony; B—trees felled and bled by the method employed in Venezuela, at right angles to the axis of the trunk, each tree being felled at three feet from the ground so that its trunk remained propped on the cut end of the stump, in order to facilitate bleeding and collecting on the lower part of the trunk, the method described by Jumelle being followed as closely as possible. Trees were also bled by means of V-shaped cuts with a common vertical channel and by means of the herring bone system, but these systems were abandoned at an early stage of the experiment as they appeared to yield considerably less than the other two systems. By methods A and B the approximate yield of dry balata per square foot of bark bled was: A—local method, 46 ounces; B—Venezuelan, 25 ounces.

EXPERIMENT TWO.

It was then decided to experiment by bleeding standing trees round the whole circumference, and by bleeding felled trees. Fourteen trees were used for this experiment. Five trees bled by the Venezuelan method yielded 14 pounds 2½ ounces, or 2 pounds 13 2/10 ounces per tree; five trees bled standing, round the whole circumference, by the feather-stitch pattern, yielded 15 pounds 5 ounces, or 3 pounds 1 ounce per tree; four trees bled standing, round half the circumference, yielded 7 pounds 11½ ounces, or 1 pound 14⅞ ounces per tree. Calculated on the basis of bark bled, the results were: Venezuelan method, 25 ounces; whole circumference, standing, 35 ounces; half circumference, 66 ounces.

EXPERIMENT THREE.

In these two experiments the trees were only bled as far as the main bark, but in their report the officers add: "It was obvious that the cuts could be extended above the main bark of the tree on the lower part of the branches both in felled and in standing trees." In the third experiment the trees were bled in this way. Only four trees were available for this experiment. The total height of the stem and branches bled by the British Guiana method was 74½ feet, and in the Venezuelan method 97½ feet, the yields obtained being, by the former method, 5 pounds, and by the latter, 4 pounds 5 ounces—an excess in favor of the British Guiana method of 11 ounces. These were all the experiments made for the purpose of comparing the methods of tapping standing trees and tapping felled trees.

CONCLUSIONS.

The officers arrived at the following conclusion: "If the results of tapping trees by the Venezuelan method, by the method now in use in British Guiana, and by a modification of the latter in which the whole circumference of the tree was bled, instead of half the circumference, be compared, they show that the greatest yields obtained were by the last method, and in no case did the yield from the trees which were felled and bled over the whole circumference exceed the yield obtained from the trees which were bled round the whole circumference, while standing, in experiment 2. The yield obtained from trees bled by the British Guiana method, in experiment 1, gave, per tree, 5 ounces less of dry balata than those bled by the Venezuelan method; in experiment 3 they gave 5½ ounces more per tree; in experiment 2 they gave 14½ ounces less per tree. In the last named it has been previously pointed out that the trees bled by this system were smaller than those bled by the other system, while the larger trees in the experiment have generally given the greatest yields.

"If the results of all the bleeding be taken together the yields obtained per tree are: British Guiana method, 2 pounds; Venezuelan method, 2 pounds 7¼ ounces—a difference of 7¼ ounces per tree. The felling of the tree before bleeding, as is done in the latter system, necessitates the employment of two men, while one can bleed a standing tree. Felling takes longer to execute, and it frequently necessitates the felling of one or more of the surrounding trees, so as to allow a clear space for the tree to fall. It demands the conveyance of additional implements, viz., axes, calabashes or collecting vessels. All of these render collection of the milk more difficult. Further, it destroys the tree, the value of which for timber in this colony is well known. In order, therefore, to compensate for difficulties ensuing in this method of extracting the latex, very large yields should be obtained. The experiments do not indicate that comparatively large yields are obtained."

THE AREA TO BE TAPPED.

On the question of tapping half the circumference or the whole circumference of standing trees, the officers recommended the former, saying: "In the hands of other than a careful bleeder it may result in the death of the tree. The tapping of one-half the circumference of a tree by the local method is the most efficient system, yielding far greater returns than any of the others per area of the bark bled."

FURTHER EXPERIMENTS.

Mr. C. Wilgress Anderson, forestry officer, conducted similar experiments for comparative purposes with trees in the Berbice River District, with the following results: Yield of six trees tapped standing, with incisions extending half way round trunks, 33.5 pounds of balata; yield of six trees tapped felled, with incisions extending completely or nearly completely around the trunk, 21.5 pounds—a difference in favor of the former method of 12 pounds, or 36 per cent. gain in balata. "Presuming," says Mr. Anderson, "that the trees, if tapped standing, around the whole circumference of the trunks, would yield twice as much latex as when tapped only half-way, the gain in balata would then be as much as 68 per cent. over that yielded by the felled trees. I may mention here that the Indians employed on the work predicted a smaller return from the trees tapped felled than from those tapped standing."

The experiments demonstrate that the figures produced in support of the felling method were entirely erratic, and it may be taken for granted that this method will not be sanctioned by the government in this colony.

SURINAM BALATA INDUSTRY IN 1913.

According to a report of the Surinam balata industry for 1913 it would seem that the production almost reached the record figure of 1911. The quantities for the last ten years have been: 1904, 225 tons; 1905, 244 tons; 1906, 267 tons; 1907, 348 tons; 1908, 454 tons; 1909, 630 tons; 1910, 893 tons; 1911, 1,146 tons; 1912, 727 tons; 1913, 1,086 tons.

The large production of 1913, tho slightly under that of 1911, was attained by the employment of a larger number of workers, while the quantity of balata was less in 1912 by reason of the drought of that year.

The area planted in Pará rubber in British Guiana is estimated at 2,700 acres.

Of the rubber hose and other rubber goods, worth $145,930, imported into Cuba during the year 1912, manufactures to the value of $110,686, were from the United States; and of the balance, $24,169 represented purchases from Germany.

British imports of tires for automobiles and motorcycles for the first two months of 1914 amounted to £371,458, as against £452,302 for the same period of 1913. Exports also showed a slight decrease, amounting to £110,635 in 1914, against £142,486 in 1913. Re-exports increased £6,034, from a value in 1913 of £32,772.

Some Rubber Planting Notes.

SINGAPORE CHAMBER OF COMMERCE RUBBER ASSOCIATION.

UNDER the presidency of H. Price, the above-named association recently held its annual meeting to receive the first yearly report under its present amended constitution, which makes the association relatively an independent body, altho in a general way subject to the Chamber of Commerce.

During the year 1913 fifty-two auctions have been held, dealing with 1,508 tons of rubber, a satisfactory increase upon the 522 tons handled in the previous year, and forming one-third of the total of the year's sales at Singapore, as against a proportion in 1912 of only one-fifth. The 4,500 tons for 1913 represented more than 10 per cent. of the total exports from Malaysia and Ceylon of 43,000 tons.

While it is admitted in the report that there has been great variation in the qualities of rubber offered for sale, the hope is expressed that the efforts of producers will soon lead to the production of thoroughly reliable standard grades, serving as a basis for forward contracts, rules governing which have already been formulated. A sub-committee has prepared eighteen types of the grades now being handled, which are at the disposal of members wishing to make them a basis for orders.

By selling in Singapore, plantation owners claim that they save 1½*d.* (3 cents) per pound as compared with sales in London. The falling off in supplies of guayule and jelutong had made the demand for plantation rubber greater than ever before. The advantages to buyers and sellers of the Singapore market were fully dealt with by the various speakers.

OFFICIAL VULCANIZING PLANT AT KUALA LUMPUR.

The new buildings of the Federated Malay States Department of Agriculture at Kuala Lumpur contain quarters for laboratory assistants, to be engaged in the testing of rubber, fibers and paper pulp, with a view to the standardization of those substances. From a partial inspection of the plant, it would seem that it includes a crêping machine and a mixing machine, both steam-injected and water-cooled. In the latter the sheet of crêpe is mixed with the sulphur and other chemicals used before being taken on to the calender machine. With this machine, Mr. B. J. Eaton, the agricultural chemist, states that three rollers are employed, between which the rubber is conducted, being taken off the canvas, and the thin sheets placed in molds to be put in the three presses—an ordinary open steam press, a high-pressure steam boiler and a hydraulic press. This last-named machine is a miniature of the presses now used for motor tires, giving much more even working than the open press. Other machines for vulcanizing and testing have been ordered, including those of Breuil and Schwartz.

RUBBER EXPORTS FROM FEDERATED MALAY STATES.

According to a cablegram from the Government to the Malay States Information Agency, the exports of plantation rubber from the Federated Malay States for the month of March amounted to 2,418 tons, as compared with 1,737 tons in the corresponding month last year and 2,364 tons in February last.

Below are the comparative statistics for 1912, 1913 and 1914:

	1912.	1913.	1914.
January ..... *tons*	1,218	2,131	2,542
February	1,212	1,757	2,364
March	1,379	1,737	2,418
Total	3,809	5,625	7,324

INTERNATIONAL ASSOCIATION FOR RUBBER CULTIVATION IN THE NETHERLAND INDIES.

The above is the title definitely selected for the new Netherlands Association, the formation of which was recorded in THE INDIA RUBBER WORLD for February last, page 270. In harmony with the international character of the organization, its articles of association have been published in Dutch, English and French. The objects, among others, are: To promote the cultivation of rubber in the Netherland Indies and to protect the interests of its members in that connection; to hold meetings; to study legislative and administrative measures, and to investigate phenomena connected with rubber cultivation. It will set up or support scientific establishments dealing with rubber and will arrange for lectures and for the publication of printed matter on the subject. Membership costs 100 guilders ($40).

RETURNS OF NETHERLANDS INDIA COMPANIES.

The result of keeping the production of tea on a level, and of throwing the increase into rubber, is shown by the return of the General Belgium-Java Cultivation Company, which records for rubber: 1912, 88,000 pounds; 1913, 208,300 pounds; tea returns being respectively 180,200 and 204,300 pounds for the two years.

Comparative returns of rubber outputs by other companies are:

	1912. Pounds.	1913. Pounds.
Bélgisch-Nederlandsche Cultuur Maatschappij.	218,900	363,850
Plantations de Bantam.....	76,610	134,624
Nieuw Tjisalak	80,823	120,404
Rubber Cultuur Maatschappij, Amsterdam...	219,700	460,700

INDRAGIRI (SUMATRA) RUBBER AND GUTTA PERCHA CO., LIMITED.

In its annual report to October 31, 1913, this company states that its planted area includes 657 acres under rubber and 285 under gutta percha. The crop for 1914 is estimated at a total of about 51,000 pounds.

ANGLO-DUTCH PLANTATIONS OF JAVA, LIMITED.

According to the report of the above company, the rubber yield of 1913 equalled 90,848 pounds, the younger rubber plantations having been affected by the drought to only an unimportant extent and the trees being generally in good condition.

PROPOSED RAILWAY FOR SOUTHERN SUMATRA.

A meeting of interested parties took place on March 25 at The Hague, to advocate the importance of the proposed railroad as a factor in the economic development of South Sumatra.

COMPARATIVE RUBBER ACREAGE IN JAVA AND SUMATRA.

Recent statistics show the following acreages planted in rubber:

	Java.	Sumatra.
1906..... *acres*	25,000	6,000
1907.....	38,000	20,000
1908.....	60,000	39,000
1909.....	107,000	67,000
1910.....	158,000	100,000
1911.....	208,000	160,000
1912.....	230,000	220,000
1913.....	245,000	240,000

MEETINGS AND REPORTS OF IMPORTANT RUBBER PLANTING COMPANIES.

Returns of the Ratanui Rubber Estate, Limited, Federated Malay States, show the production for the business year 1913 to have been 139,377 pounds, as compared with 84,021 pounds during the preceding annual period. The average net price realized was 2*s.* 9½*d.* (67.91 cents) per pound, against a cost of 1*s.* 1½*d.* (27.37 cents). Estimate for current year is 200,000 pounds.

The Bukit Panjong Syndicate, Limited, Federated Malay States, in 1913 had an output of 195,265 pounds, against an estimate of 190,000. Cost of production, f. o. b., was 1*s.* 1*d.* (26.35 cents) per pound, while average net price realized was 2*s.* 6¼*d.* (61.32 cents.) A new issue of capital to the extent of $25,000 is contemplated.

Satisfactory progress and freedom from disease was the tenor of the report of the Val d'Or Rubber Estates, Limited, Penang, which in 1913 produced 153,625 pounds at a cost, f. o. b., of 1*s.* 5½*d.* (35.47 cents) per pound, as compared with a gross selling price of 3*s.* 4½*d.* (82.10 cents). This company claims to have reached a self-supporting stage.

The output for the year 1913 of the Kamunting (Kedah) Rubber Plantation Co. was about 90,000 pounds, the total cost of which was 1*s.* 10*d.* (44.60 cents) per pound. Cost had been reduced through the operation of the new machinery, while the yield of the trees had increased. About 1,000 acres have been planted, which left a balance of 500 acres for future requirements.

As compared with an estimate of 125,000 pounds, the output of the Sendayan Rubber Co. (Federated Malay States) for the business year 1913 was 154,320 pounds, while the estimated output for 1914 is 225,000 pounds. The average cost was 2*s.* 0.83*d.* (50.34 cents), while the gross price realized was 2*s.* 9.20*d* (67.30 cents).

Owing to the fact that the cost of maintenance and working would exceed any income obtainable from the sale of rubber, the directors of the Meritini Rubber Estates, Limited, have decided to discontinue the working and cultivation of their East African rubber plantations. In this policy they are following the lines adopted by various rubber estates in British and German East Africa.

A marked increase over the estimate signalized the business year of the Lumut Rubber Estates, Limited (Federated Malay States), ending September 30. A quantity of 310,720 pounds was produced, against 190,000 pounds anticipated. The area under cultivation is 3,021 acres, while an additional 46 acres has been cleared.

The total crop harvested in the financial year 1913, by the Castlefield (Klang) Rubber Estates (Federated Malay States) was 240,851 pounds, the cost of which was 1*s.* 7½*d.* (39.53 cents) per pound, while the average net price realized was 3*s.* 2.3*d.* (77.63 cents) per pound. Negotiations have been concluded for the acquisition of the adjoining Rosapenna Estate, the cost of which will be met by the issue of additional capital.

More than 100 per cent. increase is shown by the output of the Braunston (Malay) Rubber Estates, Limited (Federated Malay States). The quantity for the year ending September 30, 1913, was 156,500 pounds, as compared with 71,192 pounds for the preceding annual period.

By the report of Pegoh, Limited (Malacca), that company is in a prosperous condition. It has an area of 2,421 acres in rubber, with a total of 403,095 trees, one-half of which are being tapped. The product for 1913 was 347,498 pounds, as against an estimate of 320,000 pounds. The total cost was 1*s.* 10*d.* (44.60 cents), and the gross average price realized 3*s.* 2¾*d.* (78.04 cents) per pound. For 1914 the crop is estimated at 425,000 pounds.

An increase from 153,295 pounds in 1912 to 212,481 pounds in 1913 is recorded for the Bikam Rubber Estate, Limited (Federated Malay States). The average gross selling price was 3*s.* 2.08*d.* (77.20 cents), and 57,000 pounds have been sold for delivery in 1914 at 2*s.* 7.09*d.* (63.02 cents).

NEW PROCESS OF TAPPING IN GERMAN EAST AFRICA.

According to the "German East African Gazette," a new process of tapping has been discovered by Herr Migdalski, director of the Prinz Heino plantation at Morogoro, East Africa.

Subsequent to the tapping on the Lewa system, there is applied to the incised parts a piece of strong, coarse and heavy sailcloth, 28 inches long by 4 inches wide, impregnated with a solution of vinegar. When complete adhesion has been obtained by stroking with the hand, the material is withdrawn. The latex which has flowed from the incisions adheres to the fabric and is gradually coagulated into a pellicle of the same dimensions, which is easily removed and even comes off of itself when its weight reaches about 11 ounces.

It is claimed for this process that it is not needed to make as many incisions as by the old methods, it being thus possible to tap more frequently. The rubber obtained is said to be much purer than that previously received, while it can be cleaned by hand instead of requiring the use of a machine. The skill hitherto called for in the work is not required.

It is also claimed that the yield thus obtained is double or triple that previously received. Before it is used, the sailcloth ought to be steeped for twelve hours in a solution of vinegar of about one part in two hundred. Practice has, however, shown that a new sailcloth need only be steeped in the ordinary coagulating solution at the time of its employment.

This new process appears likely to diminish the cost of operation and to be of material assistance to planters in their present difficulties.

AN ENGLISH CONSUL ON WEST AFRICAN RUBBER.

A British consular report states that a good deal of trouble is being taken by the government to instruct young natives on the Ivory Coast in the cultivation of rubber, they being scientifically taught as to its tapping and culture. The report adds that valuable rubber is known to exist in the forest region, the supply of which has been reported to be almost inexhaustible. Unfortunately, in the past, much damage was done to the young trees by the natives cutting them down and tapping them indiscriminately.

BELGIAN CONGO PROSPECTS.

In an official statement, the Belgian minister of the Colonies has reported a prospective deficit equaling about $4,000,000, resulting from the abolition of the domain system and from the rubber crisis. The minister expressed the opinion that oil, and not rubber, would in future be the chief product of the Congo, believing, moreover, that gold would be found in various parts of the Ituri region; while the discoveries of coal, diamonds and petroleum had prospects of economic importance. On all these points the development of railways was mentioned as an essential feature of administrative policy—possibly with loans guaranteed by the Belgian government.

PROSPECTS OF NEW CROCODILE RIVER (SELANGOR) RUBBER CO.

The above company is essentially controlled by North of England capital, and has the advantage of being under the immediate purview of Eric Macfadyen, for some time chairman of the Planters' Association of Malaya. The area under rubber is 2,149 acres, from which the product last year was 180,000 pounds, with a prospective yield of 307,000 pounds this year, 445,000 pounds in 1915 and 570,000 pounds in 1916. Mr. Macfadyen estimates the f. o. b. cost for 1914 as 1s. 1d. (26.35c.). Further reductions are anticipated, until the increasing maturity of the estates brings down the cost to about 10d. (20.27c.) per pound. These results, it has been pointed out, would leave a margin of 30 per cent. on the capital of the company.

Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED MARCH 3, 1914.

NO. 1,088,717. Inking apparatus comprising rubber faced roller. S. A. Neidich, Edgewater Park, N. J., assignor to The American Multigraph Co., Cleveland, Ohio.

1,088,768. Wheel tire. W. E. Budd, Elizabeth, N. J.

1,088,820. Tire. H. J. Griswold, Bayside, Cal.

1,088,843. Vehicle wheel rim. E. C. Shaw, assignor to The B. F. Goodrich Co.—both of Akron, Ohio.

1,088,845. Vehicle tire. J. Stromeyer, Philadelphia, Pa.

1,088,860. Combined elastic and pneumatic tire. F. H. Wilbur, Lestershire, N. Y.

1,088,902. Cable for electric current distributing systems. P. V. Hunter, Newcastle-upon-Tyne, England.

1,088,905. Wheel and pneumatic tire therefor. H. Kitcher, Toronto, Ont., Canada.

1,088,907. Process of manufacturing a substitute for vulcanite. E. Knoll, assignor to the firm of Metall-und Isolier-Werke, G. M. B. H.—both of Meiningen, Germany.

1,088,930. Tire. G. Restucci, assignor of one-half to T. P. Pugliatti—both of Naples, Italy.

1,088,973. Siphon comprising an open-ended tube of flexible material. S. B. Drinkhouse, Denver, Col.

1,089,020. An elastic vehicle tire. C. A. Swinehart, Akron, Ohio.

1,089,044. A shoe plate for a resilient tire. H. Capdevielle, Washington, D. C.

1,089,057. Combination hose plug. W. Huisveld and C. Hansen, San Diego, Cal.

1,089,061. Nozzle for vaginal syringes. S. L. Kistler, Los Angeles, Cal.

1,089,073. Overshoe retainer. S. M. Palmer, Tonica, Ill.

1,089,116. Vehicle tire. P. B. Dawson, Berkeley, Cal.

1,089,162. Machine for cleaning crude rubber. W. R. Smith, Buffalo, N. Y.

1,089,198. Hand stamp. E. Fisher, Detroit, Mich.

1,089,222. Tire protector. W. Jacobson, Lents, Ore.

1,089,236. Attachment for garment cementing machines. S. Lipson, Saugus, Mass.

1,089,265. Fire hose reel. C. Ridley, assignor to E. M. Evrard—both of Bath, Me.

1,089,284. Tire comprising a metal rim and rubber shoe. A. Stewart, Keota, Iowa.

Trade Marks.

57,310. Goodyear Rubber Co., San Francisco, Cal. The word *Hippo*. For rubber hose.

74,307. Frank & Meyer Neckwear Co., St. Louis, Mo. The word *Regal*. For suspenders, garters, etc.

74,334. O. Krichbaum, Ashland, Ohio. The word *Maxotire*. For inner tires or liners.

74,533. Hood Rubber Co., Watertown, Mass. The word *Kickoff*. For rubber footwear, etc.

74,644. P. Bailly & Cie, Paris, France. Illustration of buckle. For suspenders, braces, etc.

74,665. P. Bailly & Cie, Paris, France. The letters *C* and *G* separated by star, under which are the printed words "Bretelles Hygieniques, Charles Guyot, a Paris." For suspenders, braces, etc.

74,666. P. Bailly & Cie, Paris, France. Drawing showing suspenders, etc. For suspenders, braces, etc.

75,433. The Canfield Rubber Co., Bridgeport, Conn. Illustration of dress shield with motto "Merit Will Win." For dress shields.

ISSUED MARCH 10, 1914.

1,089,406. Spray nozzle. J. L. Fitts, Pensauken township, Camden County, N. J.—assignor to Warren Webster & Co., of New Jersey.

1,089,445. Automobile wheel. B. B. Stapleton, Downing, Mo.

1,089,482. Process of manufacturing an elastic foam from volatile solutions. F. Laarmann, Dresden, Germany.

1,089,489. Sectional resilient tire. C. A. Marien, St. Louis, Mo.

1,089,510. Fastening for overshoes. R. B. Stroup, Homeworth, Ohio.

1,089,511. Vehicle wheel. A. J. Swing, Cincinnati, Ohio.

1,089,595. Spraying device for the hair and scalp. H. Sopha, assignor to F. C. Dorment—both of Detroit, Mich.

1,089,601. Wheel. A. J. Swing, Cincinnati, Ohio.

1,089,617. Life saving buoy. J. B. Adams, Christchurch, New Zealand.

1,089,634. Vehicle wheel rim. R. F. Geide, Rochester, N. Y.

1,089,652. Pneumatic bed spring, comprising elastic, inflatable tubes. J. J. Lisbae, Canton, Ohio.

1,089,676. Vehicle tire. L. L. Savoie and E. F. Genevay, New Orleans, La.

1,089,714. Base ball. Clarence S. Lincoln, Chicago, Ill.

1,089,805. Medical appliance. G. Wolf, Berlin, Germany.

1,089,838. Teat cup for milking machines. J. L. Hulbert, Poughkeepsie, N. Y.—assignor to De Laval Separator Co., of New Jersey.

1,089,897. Sectional cushion tire. J. H. and I. E. Bedell, Stamford, Conn.

1,089,899. Vehicle wheel rim. P. B. Bosworth, Akron, Ohio.

1,089,913. Pneumatic vehicle tire. J. J. Dittenhoefer, Chicago, Ill.

1,089,932. Milking device. W. Lubke, Breslau, Germany.

1,089,979. Spring wheel. F. Stitzel, Louisville, Ky.

1,090,087. Resilient wheel for vehicles. G. H. Robinson, Bayswater, London, England.

1,090,114. Rim for pneumatic tires. B. Bradford, Norristown—assignor to Lee Tire & Rubber Co., Conshohocken, Pa.

Design.

45,368. Shoulder brace. T. G. Bowers, New Haven, Conn.

Trade Marks.

69,005. Lee Tire & Rubber Co., Whitemarsh township, Montgomery County, Pa. The word *Leeland*. For supporters, trusses and other druggists' sundries.

70,815. Wulfing Grocer Co., St. Louis, Mo. The words *Happy Home*. For rubber jar rings.

75,380. The Cutler Hammer Mfg. Co., Milwaukee, Wis. The word *Thermoplax*. For insulating material.

75,453. D. E. Kennedy, Incorporated, New York. The word *Everlastic*. For elastic floor tiles.

75,472. Coes & Young Co., Boston, Mass. The words *Joy Walkers*. For rubber footwear.

ISSUED MARCH 17, 1914.

1,090,145. Detachable tread for pneumatic tires. L. F. C. Haas, Lancaster, Pa.

1,090,069. Vehicle tire. A. W. Savage, Duarte, Cal.

1,090,195. Tire. C. E. Bright, Columbus, Ohio.

1,090,199. Resilient wheel. G. Caury and L. Salel, Marseilles, France.

1,090,290. Tire tool. W. F. Edgington and A. Murray, Springfield, Ohio.

1,090,297. Rubber tire cutting machine. A. Greenwell, Owensboro, Ky.

1,090,314. Hat cushion. W. and J. Levy, Baltimore, Md.

1,090,369. Insulating sleeve or tube machine. F. Wunderlich, Swissvale, Pa.—assignor to Westinghouse Electric & Mfg. Co., of Pennsylvania.

1,090,373. Spring wheel. F. P. Bacon, Los Angeles, Cal.

1,090,394. Coil insulating machine. E. Haffely, Basel, Switzerland—assignor to Westinghouse Electric & Mfg. Co., of Pennsylvania.

1,090,446. Cotton picker's knee pad. W. A. Boynton, Newcastle, Tex.

1,090,450. Vehicle wheel tire. M. Clark, Chicago, Ill.

1,090,513. Sectional wheel rim. S. M. Beery, Indianapolis, Ind.

1,090,535. Process of vulcanization. W. G. Hill, assignor to Apsley Rubber Co.—both of Hudson, Mass.

1,090,564. Tool for spreading tire cuts. W. Petersen, Chicago, Ill.

1,090,596. Floating jacket. W. N. Bryers, Helmer, Mich.

1,090,605. Tire construction. H. W. Dyer, East Orange, N. J.

1,090,703. Spring wheel. L. A. Furuseth, Belmond, Iowa.

1,090,727. Pneumatic tire and fastener therefor. J. A. Leach, Jr., Effingham, S. C.

1,090,797. Spring wheel. J. D. Short, Texhoma, Tex.

Reissue.

13,701. Garter package. F. A. Freeman, Overbrook, Pa., assignor to Pioneer Suspender Co., of Pennsylvania.

Design.

45,441. Rubber needle massage brush. B. L. Williams, Camden, N. J.

Trade Marks.

74,477. Rossendale Reddaway Belting & Hose Co., Newark, N. J. Illustration of camel in disconnected circle. For driving belts, machine belting, etc.

74,488. C. A. Daniel, Philadelphia, Pa. The word *Ringmeter*. For rubber hose.

ISSUED MARCH 24, 1914.

1,090,834. Resilient wheel. J. H. Brizendin, Lees Summit, Mo.

1,090,838. Vehicle tire. C. H. De Voll, New York.

1,090,844. Combined corset and abdominal supporter. M. Goodside, New York.

1,090,847. Process for manufacturing synthetic caoutchouc. C. C. F. Gross, Christiania, Norway.

1,090,851. Metal tread for block tires. C. E. Herman, assignor of one-half to S. C. Munson—both of Columbus, Ohio.

1,090,936. Breathing device. G. A. Morgan, Cleveland—assignor to The National Safety Device Co., Oberlin, Ohio.

1,090,954. Vehicle suspension apparatus comprising a tubular india rubber spring. F. Walton, Holborn, London, England.

1,090,996. Spring tire for vehicle wheels. J. W. Leonard, Newburgh, N. Y.

1,091,005. Automobile tire. E. G. McDill, Sparta, Ill.

1,091,016. Alarm for pneumatic tires. J. B. Polo, Clear Lake, S. D.

1,091,040. Automobile inflater for pneumatic tires. R. Connell, Christchurch, New Zealand.

1,091,124. Vehicle wheel comprising a pneumatic rubber tube and tire. T. Dyer, Cranston, R. I.

1,091,174. Cushion heel for boots or shoes. O. W. Tule, Hartford, Conn.

1,091,176. Tire. E. W. Wilson, assignor to Detroit Pneumatic Tire Co. —both of Detroit, Mich.
1,091,211. Garment with elastic bands to provide for contraction and expansion. G. Gelormini, Newark, N. J.
1,091,241. Wheel with sectional tire. J. Pierce, Ogden, Utah.
1,091,270. Tire. J. P. Attaway, Oswego, S. C.
1,091,287. Tire. J. Cairns, Walsall, England.
1,091,302. Resilient wheel. W. F. Doll, New York.
1,091,303. Resilient wheel. W. F. Doll, New York.
1,091,316. Tire. Lyman H. Ferguson, Buffalo, N. Y.
1,091,373. Automobile tire protector. N. H. Miller, Meadville, Pa.
1,091,379. Pneumatic tire for vehicles. O. Mussinan, New York.
1,091,384. Hose rack. W. T. Oliver, Newport News, Va.
1,091,387. Packing for wells comprising a rubber sleeve. W. S. Pierce, Franklin, Pa.
1,091,394. Hand stamp. L. K. Scotford, Chicago, Ill.—assignor to Hill-Independent Mfg. Co., Philadelphia, Pa.
1,091,437. Skid chain. J. A. McDonald, Winthrop—assignor to J. R. Peck, Brookline, Mass.

Design.

45,498. Tire. H. R. Smith, Lakewood, Ohio.

Trade Marks.

68,001. The Seamless Rubber Co., New Haven, Conn. Black fleur de lis in circle with company's name and address written around edge. For rubber gloves.
70,140. The Original Puncturefix Co., Marion, Ohio. Triangle illustration of hand hammering nails in tire. A filling composition for pneumatic tires.
71,640. Oliver's Sporting Goods House, Philadelpia, Pa. The word *Usafa*. For balls of all kinds.
75,553. T. G. Plant Co., Boston, Mass. The words *Queen Quality*. For boots and shoes of leather, rubber, etc.

ISSUED MARCH 31, 1914.

1,091,476. Elastic connecting device. S. O. Bigney, assignor to Sidney Suspender Co.—both of Attleboro, Mass.
1,091,480. Pneumatic or elastic tire. C. Burnett, Durham, England.
1,091,503. Vehicle wheel. G. F. Geb, Franklin, Mass.
1,091,515. Spring wheel. F. P. Holmes, Larned, Kan.
1,091,573. Metal tire band. T. Higgins, Pittsburgh, Pa.
1,091,698. Apron and cup supporting device adapted to be secured to a tree. E. R. Philip, Atlanta, Ga., assignor to American Can Co., New York.
1,091,699. Combined apron and cup supporting device adapted to be secured to a tree. E. R. Philip, Atlanta, Ga., assignor to American Can Co., New York.
1,091,725. Insulating composition. L. E. Barringer, Schenectady, N. Y., assignor to General Electric Co., New York.
1,091,759. Hose coupling. F. E. Paradis, Buffalo, N. Y.
1,081,780. Pneumatic tire pressure gage and dust cap. G. E. Traub, San Diego, Cal.
1,091,807. Wheel rim and tire. M. H. Cain, Indianapolis, Ind.
1,091,815. Hose supporter. R. E. Dodge, New Haven, Conn.
1,091,818. Tire supporting receptacle. R. Eisenmann, Chicago, Ill.
1,091,809. Hose attaching device. C. Elkin, New York.
1,091,839. Tire valve tool. E. N. Haverfield, Cadiz, Ohio.
1,091,878. Waterproof blast cap charge protector. J. M. Cordray, Los Angeles, Cal.
1,091,944. Articulation of dolls in which elastic cord is employed. H. W. Meier, assignor to H. W. Meier & Co.—both of Baltimore, Md.
1,091,977. Syringe. J. A. Speck, Pawhuska, Okla.
1,091,981. Tire protective rivet. E. B. Stimpson, Brooklyn, assignor to E. B. Stimpson Co., of New York.
1,092,006. Game board. W. A. Bailey, Lincoln, Neb.
1,092,016. Poison indicator, comprising an elastic band. R. W. Bugbee, St. Louis, Mo.
1,092,068. Means for automatically inflating pneumatic tires. A. L. McDonald and D. L. Middleton, Sanderson, Fla.
1,092,078. Cushion tire, which is hollow. M. C. Overman, New York.
1,092,105. Removable waterproof lining. H. C. Holmes, Portland, Ore.
1,092,119. Tire. L. H. Ferguson, Ithaca, N. Y.
1,092,129. Method of manufacturing rubber blocks for springs, etc. A. G. Spencer, London, England.
1,092,130. Tube for pneumatic tires. W. A. Vail and O. E. Smith, assignors of one-fourth each to the following: O. E. Smith, F. Lackner, J. Holden and W. A. Vail—all of Chicago, Ill.

Design.

45,548. Rubber brush. O. Eick, St. Louis, Mo.

Trade Marks.

72,971. C. W. Hutchings, assignor to Indexo Co., Inc.—both of New York. Illustration of hand, on index finger of which is a tooth brush. For tooth brushes.
74,417. L. Meredith, London, England. Illustration of snakes coiled around tree. For pneumatic tires.
75,589. The Royal Equipment Co., Bridgeport, Conn. Illustration of brake lining. For brake lining.

[NOTE.—Printed copies of specifications of United States patents may be obtained from THE INDIA RUBBER WORLD office at 10 cents each, postpaid.]

GREAT BRITAIN AND IRELAND.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent at the filing of the application, which in the case of these listed below was in 1912.

**Denotes Patents for American Inventions.*

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, MARCH 4, 1914.]

25,514 (1912). Punching balls. H. Edwards, 64 Commercial street, Newport, Monmouthshire.
25,575 (1912). An apparatus for repairing rubber goods. N. I. Spriggs, 83 London Road, Leicester.
25,612 (1912). Rubber tapping knives, etc. T. and H. Burman, Lee Bank Works, Ryland Road, Birmingham.
25,616 (1912). Twin detachable rims carrying elastic tires. C. S. Challiner, 18 Park Range, and J. A. Challiner, The Glen, Anson Road—both in Victoria Park, Manchester.
25,641 (1912). Spraying nozzles. W. A. Dexter and J. P. Little, 45 Scotland street, Glasgow.
25,719 (1912). Solid rubber tire of the band type. T. Gare, Cumberland House, Park Lane, Wembley, Middlesex.
25,779 (1912). Pneumatic tire covers. G. W. Beldam, Boston Lodge, Ealing, London, and A. U. B. Ryall, Granville, Windmill Road, Brentford, Middlesex.
25,781 (1912). Sock suspender. F. Barth, 151 Ronsdorferstrasse, Barmen, Germany.
25,842 (1912). Protective cover for rubber football bladder. J. W. Albers, 1 Bremerstrasse, Harburg-on-Elbe, Germany.
25,865 (1912). Tire attachments to rims. J. Stungo, 11 Eylauerstrasse, Berlin.
*25,887 (1912). Rubber diaphragm in connection with foot arch supports. W. C. J. Guilford, 722 Tenth street, Northwest, Washington, U. S. A.
25,912 (1912). Elastic substances. W. E. Reeser, 46 Amsteldijk, Amsterdam.
25,915 (1912). Detachable rubber treads for foot operated levers. R. Surridge, 58 Lomond Grove, Camberwell, London.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, MARCH 11, 1914.]

26,153 (1912). Spring wheels. C. Madden, 53 Devonshire street, Islington, London.
*26,191 (1912). Spring wheel with continuous outer rigid ring and pneumatic cushions. G. A. Eberhardt, 2840 South Forty-first avenue, Chicago, Ill., U. S. A.
26,277 (1912). Extracting gutta-percha, etc., from shrubs. G. Hughes, 55 Chancery Lane, London.
*26,312 (1912). Respiratory apparatus. G. A. Morgan, 52027 Harlem avenue, and J. W. Wills, 2323 Central avenue—both in Cleveland, Ohio, U. S. A.
26,379 (1912). A solid rubber or like tire in which is embedded an endless articulated band. A. W. Torkington, 76 York street, Westminster, and Stelastic & General Syndicate, 11 Queen Victoria street, London.
26,387 (1912). Tire with rim enclosing air tube or chamber. M. Schwertfuhrer, 117 Avenue de la Reine, Brussels.
26,446 (1912). Implement for tapping rubber trees, etc. J. Da C. Gadelha, Nova Vista, Labrea, Amazonas.
26,513 (1912). Tire tool. W. J. Hill, 64 Vivian Road, Harborne, Birmingham.
26,524 (1912). Rubber sole with integral rubber studs—for boots or shoes. S. Dreyfus and L. Gaisman, trading as Hooley Hill Rubber & Chemical Co., Stamford Road, Hooley Hill, Manchester.
26,550 (1912). Caoutchouc substances. J. Y. Johnson, 47 Lincoln's Inn Fields, London.
26,589 (1912). Aeronautics. E. S. Drake, 79 Welland avenue, St. Catharines, Ontario, Canada.
26,598 (1912). Rubber heel for boots, etc. A. Demorey, 18 Boulevard du Nord, and B. Tournier, 47 Rue Montgolfier—both in Lyons, France.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, MARCH 18, 1914.]

*26,669 (1912). Air tubes and chambers for wheel tires. H. McCleary, 1226 New Hampshire avenue, Washington, U. S. A.
26,679 (1912). Stethoscopes, etc. C. A. Teske, 33 Percy street, Tottenham Court Road, London.
26,682 (1912). Exercising apparatus: massage. H. J. Wareham, 28 Gateley Road, Brixton, London.
*26,688 (1912). Appliances for cleaning vehicles, windows, etc. C. F. Schuh, 11 Shephard avenue, Newark, N. J.
26,754 (1912). Means for attaching rubber bulbs, etc., to metallic and like tubing. M. Kemp Welch, Corrie, Harriatts Lane, Ashtead, Surrey.
26,819 (1912). Spring wheels for vehicles. C. S. Hope-Johnstone, 96 Piccadilly, London.
26,874 (1912). Wheel tires. C. M. Lloyd, Claridge's Hotel, Brook street, London.
26,946 (1912). Flooring for a tennis court, comprising india rubber or like tiling. R. K. Gray, 106 Cannon street, London.
26,960 (1912). Footballs. W. McConnell, Greenside Place, Auchenleck, Ayrshire.
27,003 (1912). A non skid device, adapted to be embedded in the tread of an elastic tire. G. W. Beldam, Boston Lodge, Ealing, London.
27,010 (1912). Eraser holders. E. W. Yelf, 31 Castle Road, Portsmouth.
27,059 (1912). Tread of a pneumatic tire. E. Wendel, Saargemund, Lothringen, Germany.

*27,104 (1912). Tread band for wheel tires. F. Pawlick, 10635 Curtis avenue, Chicago, Ill., U. S. A.

27,208 (1912). An elastic material which may be used for filling tires. R. Legrand, 39 Rue d' Arceuil, Gentilly, Seine, France.

27,221 (1912). Covering wire with insulating material. W. E. Lake, 7 Southampton Buildings, London.

27,302 (1912). Spring wheels comprising rubber cushions. C. E. Moser, 14 Rue Thiers, Boulogne-sur-Mer, Seine, France.

27,304 (1912). Auxiliary rim attachments to wheels. A. J. A. Bruet, 26 Rue de la Legion d' Honneur, St. Denis, Seine, France.

27,324 (1912). Spraying nozzles. H. A. Thompson, 22 Sandringham Gardens, North Shields, and L. E. Smith, High Docks, South Shields.

*27,373 (1912). Spring wheels. F. W. Brown, 2618 Coliseum street, New Orleans, La., U. S. A.

27,385 (1912). Spring wheels with sectional outer guided members. M. A. E. McCarthy, 32 Hanover Road, Brondesbury Park, and H. S. Swinnerton, 7 Gayhurst Road, Dalston—both in London.

*27,395 (1912). Shaving brush and rubber massage pad combined. M. L. Brandt, 547 Howard avenue, Brooklyn, N. Y., U. S. A.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, MARCH 25, 1914.]

*27,416 (1912). Spring wheels. D. L. Crosbie, 303 People's Saving Bank Buildings, Sacramento, Cal., U. S. A.

27,419 (1912). Detecting and closing punctures in wheel tires. G. H. E. Cooke, 17 St. Edmunds Terrace, Regent's Park, London.

27,446 (1912). Feeding bottle stopper with rubber plug. A. A. Otawa, Turenki, Finland.

27,489 (1912). Horse boots. J. W. E. Adamthwaite, Edensor, Bakewell, Derbyshire.

27,544 (1912). Rubber enclosed parts of phonographs. Wilkie & Co., E. Gorlitz and A. Bug, 48 Greifswalderstrasse, Berlin.

27,583 (1912). Golf balls. P. A. Martin, Granville street, and J. Stanley, 70 Ivor Road, Sparkhill—both in Birmingham.

27,599 (1912). Utilizing waste india rubber. A. M. Low, 10 Paul street, London, E.C.

27,614 (1912). Splash guards for motor and other vehicles, comprising a strip of rubber. A. A. Ansell, 66 Barking Road, Canning Town, London.

27,665 (1912). Lateral splash guards. P. T. Maw, Holmesdale, Nutfield, Surrey.

*27,770 (1912). Body harness, particularly for use by aviators. W. I. Twombly, 258 West Sixty-ninth street, New York, U. S. A.

*27,887 (1912). Detachable rim attachments to wheels. A. du R. Reid, 605 West Gay street, West Chester, Pa., U. S. A.

*27,891 (1912). Non skid device. M. A. Carter, Granville, New York, and O. C. Smith, Bridgeport, Conn., U. S. A.

27,909 (1912). Block tires. A. H. Buckland, 41 Westfield Road, Hornsey, London.

27,941 (1912). Abdominal belts. A. Wolz, Coire, Grisons, Switzerland.

27,965 (1912). Respirator. W. E. Lake, 7 Southampton Buildings, London.

27,977 (1912). Spring wheel with continuous outer rigid ring and pneumatic and like cushions. J. Spyker, 1d, Sarphatistraat, Amsterdam.

27,982 (1912). A device for pressing hats comprising a rubber chamber B. J. Diaz, 6 Tahona de las Descalzas, Pral., Izquierda, Madrid.

28,047 (1912). Dumb-bells of rubber filled with fluid. C. Barbey, 11 Avenue Max Mourrier, Geneva, Switzerland.

THE FRENCH REPUBLIC.

PATENTS ISSUED (With Dates of Application).

462,617 (July 1, 1913). Bognier & Burnet. Manufacture of rubber bulbs for automobile and other horns or trumpets.

462,758 (September 18). "Montsouris" Rubber Co. Manufacture of bulbs in one piece with neck.

462,772 (September 19). J. Sternegger. Antiskid protector for solid or pneumatic tires.

462,793 (November 30, 1912). de Baudicourt, Cadoret & la Gabinière. Process of treating india-rubber, gutta-percha, and other similar crude resinous gums, for the obtaining of pure rubber.

462,799 (November 30). J. M. Lestrade. Machine for automatically adjusting rivets and washers on the leather parts of antiskid tires.

462,826 (September 20, 1913). S. Librowicz. Protective equipment for pneumatic tires.

462,878 (September 23). R. Ahrend. Interchangeable heels for footwear.

463,064 (December 7, 1912). Paris General Omnibus Co. Circular mudguard tire, specially intended for heavy vehicles at a high speed.

463,069 (September 29, 1913). G. A. Guzzi. Mudguard appliance for wheels of automobiles and other vehicles.

463,078 (September 29). J. Bernard. Pneumatic shock absorber for vehicles and other purposes.

463,120 (September 30). J. Destriez and E. Duthilleul. Non-bursting air tube replacing the air chamber for automobile tires.

463,145 (October 2). Société Anonyme Caoutchouc. Antiskid tire for all vehicles.

463,169 (October 2). E. L. Autraignes. Movable and interchangeable tread for pneumatic tires of vehicle wheels.

463,190 (September 3). R. Barnfather. Improvements in arrangements for filling pneumatic tires for automobiles, etc.

463,200 (September 13). G. Kraitschur. Process for manufacture of a solid and elastic mass by means of leather waste.

463,270 (October 4). D. A. York. Elastic tire for vehicle wheels.

463,277 (October 4). G. Boivin. Antiskid protector for pneumatic tires.

463,344 (October 7). J. M. Pignon. Machine for putting in form the covers of tires for all vehicles.

463,437 (September 3). Badische Anilin & Soda Fabrik. Improvement in quality of synthetic rubber substances and vulcanization of products thus obtained.

463,515 (October 10). A. Leewitz. Heating apparatus and automatic regulation of temperature, particularly applicable to vulcanization.

463,622 (October 14). Actiengesellschaft für Anilin Fabrikation. Synthetic rubber with an acetyl-cellulose base; as well as oilcloths, imitations of leather and similar products.

463,681 (October 16). H. G. Hugan. Improvement in fastenings for wooden shoes.

463,684 (October 16). J. K. Williams. Improvements in process for vulcanizing rubber objects.

[NOTE.—Printed copies of specifications of French patents can be obtained from R. Bobet, Ingenieur-Conseil, 16 avenue de Villiers, Paris, at 50 cents each postpaid.]

THE GERMAN EMPIRE.

PATENTS ISSUED (With Dates of Validity).

271,849, Class 39b (November 2, 1912). Process for improvement of synthetic products resembling rubber. Badische Anilin- und Sodafabrik, Ludwigshafen-on-Rhine.

271,855, Class 63e (August 26, 1913). Device for indicating the escape of air from pneumatic tires. Josef Hilbert and Carl Hilbert, Aix-la-Chapelle.

271,856, Class 63e (April 15, 1913). Antiskid device for pneumatic tires. Fritz Spitzbarth, Plauen, Saxony.

271,904, Class 39a (August 8, 1912). Process for arrangement of spiral-formed thread insertions in rubber discs. Globus Rubber and Asbestos Works, Ahrensbök.

272,325, Class 39b (December 21, 1911). Process for the production of an elastic material, resembling rubber. Algemeene Uitvinding Exploitatie Maatschappij, Amsterdam.

272,349, Class 30g (October 3, 1913). Fastening for feeding bottles, with valve opening by suction. Karl Kühnle, Perlebreg.

272,398, Class 39a (November 22, 1912). Machine for washing rubber and like substances. J. E. Pointon, Westwood Works, Peterborough, England.

272,399, Class 39b (December 4, 1912). Process for the improvement of synthetic substances resembling rubber (supplement to Patent 271,849). Badische Anilin- und Sodafabrik, Ludwigshafen-on-Rhine.

272,409, Class 63e (July 3, 1912). Rubber tires over an elastic core. Demetrio Maggiora, London.

272,410 and 272,411, Class 63e (June 18, 1913). Antiskid pneumatic tire cover. Vereinigte Berlin-Frankfurter-Gummiwaaren-Fabriken, Gelnhausen.

272,521, Class 75b (May 16, 1911). Impression of decorations by calenders on heated vulcan fiber slabs. Vulcan Fiber Import Martin Schmid, Berlin.

272,548, Class 63e (July 26, 1911). Pneumatic tires with insertions of layers of fabric lining. R. Latour & A. Capelle, Menin, Belgium.

272,606, Class 63e (April 28, 1912). Treads for motor vehicle tires, with helically wound wires in the direction of the revolution. Continental Patent Exploitation Co., Berlin.

THE KINGDOM OF BELGIUM.

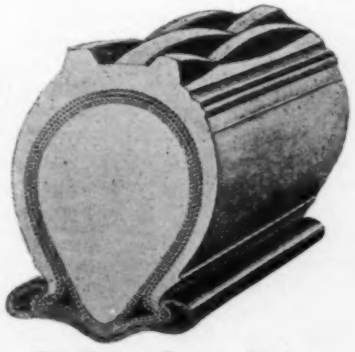
PATENTS PUBLISHED.

262,963 (March, 1914). Process of regenerating rubber. Xylos Rubber Co., Ltd., Trafford Park, Manchester, England.

263,299 (March, 1914). Process for accelerating the vulcanization of natural or artificial rubber. Farbenfabriken vorm. Fried. Bayer & Co., Leverkusen, Germany.

BASKET PATTERN NON-SKID TREAD.

The accompanying cut shows a novel construction of a non-skid rubber tread having a surface representing a basket weave. On account of the nature of this tread, presenting many corners and projections to the surface of the road, it is claimed to embody greater safety from skidding than has been heretofore attained by merely changing the form of the tread surface. While this tire is comparatively new in this country, it is well known in England, where it has formed a part of the equipment of victorious cars in several notable contests. [Continental Tyre & Rubber Co., South Kensington, S. W., London.]



THE BASKET PATTERN TREAD

Review of the Crude Rubber Market.

AS will be recalled, the prominent feature of the rubber market during recent months has been the gradual equalization of the London rates for fine hard Pará and plantation. On March 24 the prices were respectively 3*s.* 0*d.* (72.98 cents) and 2*s.* 5¾*d.* (60.31 cents). Owing to a gradual advance in the latter, without any notable change in the former, the positions on April 17 were equal at 3*s.* 0½*d.* (73.99 cents). From April 17 to April 25 (the time of writing), the course of the market has been as follows:

	Fine Pará.	Plantation.
April 17.....	3*s.* 0½*d.* (73.99 cents)	3*s.* 0½*d.* (73.99 cents)
April 18.....	3*s.* 0½*d.* (73.99 cents)	2*s.* 11¾*d.* (72.47 cents)
April 20.....	3*s.* 0 *d.* (72.98 cents)	2*s.* 11 *d.* (70.95 cents)
April 21.....	3*s.* 0 *d.* (72.98 cents)	2*s.* 10¾*d.* (70.44 cents)
April 22.....	2*s.* 11¾*d.* (72.47 cents)	2*s.* 8¾*d.* (66.39 cents)
April 23.....	2*s.* 11¾*d.* (72.47 cents)	2*s.* 7½*d.* (63.85 cents)
April 24.....	2*s.* 11¾*d.* (72.47 cents)	2*s.* 7¼*d.* (63.35 cents)
April 25.....	2*s.* 11¾*d.* (72.47 cents)	2*s.* 6¾*d.* (62.33 cents)

On March 24 the London plantation auction of 1,279 tons showed a good demand, with an advance of 1*d.* to 1½*d.* (2 to 3 cents) per pound. At the sale of April 7, the 1,075 tons offered also met with a good inquiry, especially for standard crêpe, with an advance of 2*d.* (4 cents) per pound. Cable advices report that the 1,350 tons plantation offered April 21 sold at advanced prices, as compared with the previous sale.

London statistics of Eastern plantation rubber show following results:

	1913.	1914.
Stocks February 28.....*tons*	2,964	4,220
Arrivals March	2,443	3,580
Total	5,407	7,800
Deliveries March	2,614	4,090
Stocks March 31.....	2,793	3,710
Arrivals Jan. 1 to March 31.....	7,759	10,980
Deliveries Jan. 1 to March 31.....	6,982	10,460

Deliveries thus seem to be keeping closer to arrivals than was the case last year, while also being numerically larger than in 1913.

The Antwerp sales of March 25 included 273 tons Congo sorts, of which 240 tons were placed; as well as 253 tons plantation, which realized 3 per cent. over the valuation. Crêpes were in good demand, particularly light colored standard descriptions. For April 28 a sale was announced of 330 tons, of which 115 tons were plantation. An impression prevails that the available stock of rubber is not sufficient to cover the wants of consumers.

At Amsterdam on April 1, 93½ tons were offered, including 86 tons *Hevea,* which commanded high prices in harmony with those current in other markets. The next inscription sale was announced for April 30.

The favorable conditions reported from London were reflected in the Rotterdam sale of April 8, which included about 40 tons *Hevea,* 10 tons *Ficus* and 10 tons Congo, etc. Owing to the brisk demand, prices were satisfactory to holders. The next sale is announced for May 8.

From Hamburg the market in the early days of April was reported quiet but firm, similar features having marked the preceding month.

NEW YORK QUOTATIONS.

Following are the quotations at New York one year ago, one month ago, and April 28, the current date:

PARA.	May 1, '13.	Apr. 1, '14.	Apr. 28, '14.
Islands, fine, new.....	80@81	69 @71	72@
Islands, fine, old.....	.....	.....	.....
Upriver, fine, new.....	82@83	74 @75	74@75
Upriver, fine, old.....	.....	.....	.....
Islands, coarse, new.....	39@40	31 @32	31@
Islands, coarse, old.....	.....	.....	.....
Upriver, coarse, new.....	55@56	44 @45	45@46
Upriver, coarse, old.....	.....	.....	.....
Cameta	42@43	35½@36	35@36
Caucho (Peruvian) ball....	57@58	45 @46	45@46
Caucho (Peruvian) sheet..	.....	.....	.....
PLANTATION CEYLON.			
Fine smoked sheet.....	81@82	64 @65	68@69
Fine pale crepe.....	80@	63 @64	67@69
Fine sheets and biscuits....	80@	62 @63	62@67
CENTRALS.			
Esmeralda, sausage	56@	43 @44	45@46
Guayaquil, strip	.....	.....	.....
Nicaragua, scrap	55@	40 @41	40@41
Panama	.....	.....	.....
Mexican plantat'n sheet....	.....	.....	.....
Mexican, scrap	55@56	42 @43	43@44
Mexican, slab	.....	.....	.....
Mangabeira, sheet	.....	.....	.....
Guayule	.....	.....	.....
Balata, sheet	.....	.....	.....
Balata, block	.....	50 @51	.....
AFRICAN.			
Lopori, ball, prime	.....	53 @54	53@54
Lopori, strip, prime	.....	.....	.....
Aruwimi	65@	.....	.....
Upper Congo, ball red.....	75@	.....	.....
Ikelemba	.....	.....	.....
Sierra Leone, 1st quality...	.....	.....	.....
Massai, red	74@	49 @54	49@52
Soudan Niggers	.....	49 @54	.....
Cameroon, ball	60@	34 @	35@36
Benguela	.....	31 @	.....
Madagascar, pinky	.....	.....	.....
Accra, flake	.....	21 @22	22@23

New York.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York) advises as follows: "During April the demand for paper has continued good, city and out-of-town banks buying freely, and rates have ruled at 4¼ to 4¾ per cent. for the best rubber names, and 5 to 5½ per cent. for those not so well known—some of the latter as high as 6 to 6½ per cent., principally Western paper.

NEW YORK PRICES FOR FEBRUARY (NEW RUBBER).

	1914.	1913.	1912.
Upriver, fine	$0.75@0.79	$0.96@1.03	$1.07@1.11
Upriver, coarse	.46@ .47	.72@ .78	.92@ .94
Islands, fine	.64@ .69	.92@ .97	1.05@1.08
Islands, coarse	.31@ .32	.47@ .51	.62@ .65
Cametá	.35@ .38	.48@ .51	.65@ .67

PRICES FOR MARCH (NEW RUBBER).

	1914.	1913.	1912.
Upriver, fine	$0.73@0.76	$0.88@0.96	$1.11@1.23
Upriver, coarse	.43@ .46	.64@ .72	.93@ .99
Islands, fine	.68@ .70	.85@ .92	1.08@1.18
Islands, coarse	.31@ .33	.41@ .47	.63@ .67
Cametá	.35@ .36	.43@ .48	.66@ .72

STATISTICS PARA INDIA RUBBER (IN TONS).

(Including Caucho)

STATISTICS FOR THE MONTH OF MARCH.

	Pará.	Caucho.	1914. Tons.		1913. Tons.	1912. Tons.	1911. Tons.
Receipts at Pará	3,260	1,590	= 4,850	against	4,260	4,400	3,530
Shipments to Liverpool	1,750	720	= 2,470	"	2,270	1,830	2,150
Shipments to Continental Ports	310	40	= 350	"	920	380	320
Shipments to America	1,410	560	= 1,970	"	1,800	2,680	690
American Imports	2,000	650	= 2,650	"	1,570	2,570	1,100
American Deliveries	1,850	620	= 2,470	"	1,900	2,610	810
Liverpool Imports	1,375	750	= 2,080	"	2,078	1,940	2,191
Liverpool Deliveries	1,230	690	= 1,920	"	1,705	2,140	764
Continental Imports	650	150	= 800	"	690	390	350
Continental Deliveries	640	140	= 780	"	660	380	320

VISIBLE SUPPLY—1ST APRIL, 1914.

	1914. Pará.	1914. Caucho.	1913.	1912.	1911.
Stock in England, Pará, 1st hands	765	.....	1,021	1,390	3,029
Pará, 2nd hands	95	.....	129		689
Caucho	.....	280	403	290	719
Stocks in Pará, 1st hands	250	140	640	260	960
2nd hands	400	360	420	450	220
Syndicate	810	.....	810	2,240	2,870
Stock in America	310	200	490	90	450
Stock on Continent	30	10	50	70	130
Afloat—Europe	1,380	460	2,150	1,350	1,400
Afloat—America	670	410	1,000	840	230
	4,710	1,860			
Total Visible Supply, including Caucho.	6,570		7,113	6,980	10,697

CROP STATISTICS—30TH JUNE, 1913, 31ST MARCH, 1914.

	Pará.	Caucho.	1913/14.	1912/13.	1911/12.	1910/11.
Pará receipts.. 1913/14	24,030	6,330	30,360	33,430	30,110	29,230
Pará receipts.. 1912/13	27,100	6,330				
Pará Shipments to Europe	12,770	3,650	16,420	18,740	15,530	15,160
Pará Shipments to America	11,210	2,470	13,680	15,980	16,150	10,530
England Landings, net			10,885	12,862	11,057	11,152
England Deliveries, net			11,595	12,679	14,447	9,485
America Landings, net			13,160	15,310	17,745	10,770
America Deliveries, net			12,830	14,990	17,555	10,460
Continental Imports, net			2,990	3,680	2,640	2,500
Continental Deliveries, net			3,200	3,725	2,680	2,420

POSITION—1ST APRIL, 1914.

Increase in Receipts during March, 1914, against March, 1913	590
Decrease in Receipts—Crop, July/March, 1913/14, against 1912/13	*3,070
Decrease in Deliveries—Crop, July/March, 1913/14, England and Continent, against 1912/13	1,609
Decrease in Deliveries—Crop, July/March, 1913/14, America, against 1912/13	2,160
Decrease in Visible Supply Pará Grades, against 1st April last year	543
Decrease in Stock, England, March 31st, 1914, against March 31st, 1913	413

WM. WRIGHT & CO., Brokers,
London, April, 1914. 21, Mincing Lane, London, E.C.

During the month 95 tons Pará have been shipped from Europe to America.

*A decrease of 3,070 tons Rubber, and nil Caucho.

Amsterdam.

JOOSTEN & JANSSEN report [April 1]:

Of 93½ tons offered for sale today, 91 tons have been sold. The generally favorable tone of the market within the last few days had an influence upon today's inscription sale, almost the whole of the lots offered having been placed at very good prices, *Hevea* averaging 11 per cent. above valuations.

Rotterdam.

HAVELAAR & DE VRIES report [April 9]:

Prices at yesterday's sale, under the influence of London advices, were very favorable to holders; nearly the whole of the 77½ tons offered finding buyers. Competition was keen.

Antwerp.

RUBBER STATISTICS FOR MARCH.

DETAILS.	1914.	1913.	1912.	1911.	1910.
Stocks, Feb. 1....*kilos*	369,502	561,289	521,956	539,207	516,534
Arrivals in March—					
Congo sorts	269,380	172,396	172,449	365,463	174,167
Other sorts	12,040	16,715	7,642	60,342	31,452
Plantation sorts	202,269	152,685	70,873	57,591	57,569
Aggregating	853,191	903,085	772,920	1,022,603	779,722
Sales in March	510,861	251,580	413,904	376,989	280,620
Stocks, March 31	342,330	651,505	359,016	645,614	499,102
Arrivals since January 1—					
Congo sorts	691,633	691,716	730,472	940,962	830,830
Other sorts	46,695	35,178	30,618	161,177	80,155
Plantation sorts	642,166	436,897	277,610	167,529	128,694
Aggregating	1,380,494	1,163,791	1,038,700	1,269,668	1,039,679
Sales since January 1	1,597,445	1,023,346	1,354,422	1,212,266	1,082,089

RUBBER ARRIVALS FROM THE CONGO.

MARCH 24.—By the steamer *Albertville:*

Bunge & Co	(Belgika) *kilos*	4,390
do	(Comp. Commerciale Congolaise)	23,300
do	(Cie du Congo belge)	1,270
do	(Cie du Kasai)	80,000
do	(Grands Lacs)	4,890
do	(Forminière)	1,960
Société Coloniale Anversoise	(Comminière)	5,000
do	(Cie franç. du H. C.)	5,100
do	(Lomami)	2,260
do	(H. C.)	12,640
do	(Intertropicale)	4,050
do	(Alimaienne)	5,190
Crédit Colonial & Commercial (Anc. L. & W. Van de Velde)	(Comfina)	12,600
do	(Crevelde)	2,800
Comp. Coloniale franco-belge—Ch. Dethier	(American Congo Cy)	9,000
do	(N'Kémé & N'Kéni)	3,300
Willaert Frères		2,000 179,750

Rubber Scrap Prices.

LATE NEW YORK QUOTATIONS.—Prices paid by consumers for carload lots, per pound:

	April 29, '14.
Old rubber boots and shoes—domestic	7⅝@ 7¾
Old rubber boots and shoes—foreign	7½@ 7¾
Pneumatic bicycle tires	4½@ 4¾
Automobile tires	5¾@ 5¾
Solid rubber wagon and carriage tires	5⅛@
White trimmed rubber	10 @10¼
Heavy black rubber	3¾@ 4
Air brake hose	3⅛@
Garden hose	1 @ 1¼
Fire and large hose	2 @ 2⅛
Matting	⅝@ ¾
No. 1 white auto tires	5½@ 5¾
Foreign auto tires	5¼@ 5½

IMPORTS FROM PARA AT NEW YORK.

[The Figures Indicate Weight in Pounds.]

MARCH 23.—By the steamer *Cuthbert* from Pará and Manáos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss	300,200	55,300	178,600	52,100=	586,200
General Rubber Co	97,400	14,100	47,600	.....=	159,100
Meyer & Brown	117,800	24,800	160,200	59,700=	362,500
Robinson & Co	168,900	58,500	66,700	85,400=	379,500
H. A. Astlett & Co	6,000	11,600	98,500	23,900=	140,000
Henderson & Korn	8,600	6,600	17,300	46,000=	78,500
G. Amsinck & Co	53,000	400	16,000	8,000=	77,400
W. R. Grace & Co	2,200	.....	.....	10,700=	12,900
Hagemeyer & Brunn	.....	.....	11,200	2,800=	14,000
Total	754,100	171,300	596,100	288,600=	1,810,100

APRIL 6.—By the steamer *Pancras*, from Pará and Manáos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss	282,500	38,300	123,700	199,800=	644,300
General Rubber Co.	91,900	12,400	61,600	.....=	165,900
Meyer & Brown	103,600	22,000	150,500	219,200=	495,300
Hagemeyer & Brunn	1,100	3,200	19,000	70,500=	93,800
Henderson & Korn	51,900	8,000	29,600	89,200=	178,700
H. A. Astlett & Co.	31,500	6,000	78,600	111,200=	227,300
Johnstone, Whitworth & Co.	.....	.....	.....	89,600=	89,600
L. Hagenaers & Co.	40,000	7,000	12,400	8,400=	67,800
G. Amsinck & Co.	12,400	.....	.....	5,500=	17,900
Robinson & Co.	62,300	31,900	54,300	20,600=	169,100
American Express Co.	21,500	.....	.....	.....=	21,500
Robinson & Co.	.....	6,200	6,300	2,200=	14,700
Total	698,700	135,000	536,000	816,200=	2,185,900

APRIL 16.—By the steamer *Frances*, from Pará and Manáos:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss	242,800	50,300	155,100	254,200=	702,400
Meyer & Brown	88,400	24,800	77,600	385,100=	575,900
General Rubber Co.	20,800	5,000	26,800	6,700=	59,300
Henderson & Korn	64,700	2,700	16,600	148,700=	232,700
H. A. Astlett & Co.	18,800	22,900	53,000	33,600=	128,300
Johnstone, Whitworth & Co.	.....	8,300	32,400	45,600=	86,300
G. Amsinck & Co.	2,900	400	700	2,800=	6,800
American Export Co.	21,800	.....	.....	.....=	21,800
Robinson & Co.	.....	.....	15,000	.....=	15,000
Robinson & Co.	131,200	26,500	7,500	61,800=	227,000
Total	591,400	140,900	384,700	938,500=	2,055,500

PARA RUBBER VIA EUROPE.

POUNDS.

MARCH 23.—By the *Carmania*=Liverpool:
Arnold & Zeiss (Fine) 51,500

APRIL 4.—By the *President Lincoln*=Hamburg:
Henderson & Korn (Caucho) ... 16,000
Rubber & Guayule Agency, Inc. (Fine) 10,000
Various (Fine) 5,500 31,500

APRIL 6.—By the *Kaiserin Auguste Victoria*=Hamburg:
Henderson & Korn (Caucho) ... 18,000
Various (Fine) 20,000 38,000

APRIL 11.—By the *Cestrian*=Liverpool:
Johnstone, Whitworth & Co. (Fine) 13,500
Raw Products Co. (Coarse) 22,500 36,000

APRIL 15.—By the *Finland*=Antwerp:
Various (Fine) 11,200

APRIL 17.—By the *Lusitania*=Liverpool:
Robinson & Co. (Fine) 4,500
Various (Fine) 2,200 6,700

APRIL 17.—By the *Canadian*=Liverpool:
Henderson & Korn (Fine) 22,500
Johnstone, Whitworth & Co. (Fine) 11,200
General Rubber Co. (Coarse) 11,200 44,900

APRIL 20.—By the *Amerika*=Hamburg:
Ed. Maurer (Fine) 22,500
Rubber & Guayule Agency, Inc. (Fine) 5,000
Robinson & Co. (Caucho) 22,500 50,000

APRIL 20.—By the *Graf Waldersee*=Hamburg:
Rubber & Guayule Agency, Inc. (Fine) 7,000
Various (Fine) 9,000 16,000

OTHER NEW YORK ARRIVALS.

CENTRALS.

POUNDS.

MARCH 23.—By the *Advance*=Colon:
Piza, Nephews & Co. 2,200
W. R. Grace & Co. 2,000
Lawrence Johnson & Co. 1,000
Strong & Trowbridge Co. 600 5,800

MARCH 25.—By the *Prins August Wilhelm*=Colon:
G. Amsinck & Co. 2,500
Minor Keith 1,300 3,800

MARCH 25.—By the *Tagus*=Colon:
A. M. Capen's Sons 4,500

MARCH 25.—By the *Kentuchian*=Coatzacoalcos:
G. Amsinck & Co. 4,500
H. Marquardt & Co. 300 4,800

MARCH 25.—By the *Pastores*=Port Limon:
A. A. Lindo & Co. 500

MARCH 27.—By the *Panama*=Colon:
G. Amsinck & Co. 4,500
Lawrence Johnson & Co. 6,700
W. R. Grace & Co. 1,500 12,700

MARCH 28.—By the *Esperanza*=Mexico:
E. Steiger & Co. 2,500
Harburger & Stack 2,000 4,500

MARCH 31.—By the *Suriname*=Belize:
Rosenthal & Sons 600

MARCH 31.—By the *Virginia*=Colombia:
Pottberg, Ebeling & Co. 7,000
G. Amsinck & Co. 200 7,200

APRIL 1.—By the *Prins Sigismund*=Colombia:
Isaac Brandon & Bros. 500

APRIL 1.—By the *Alliance*=Colon:
G. Amsinck & Co. 11,000
Wessels, Kulenkampff & Co. 5,000
Meyer, Hecht & Co. 500 16,500

APRIL 3.—By the *Mexico*=Mexico:
E. Steiger & Co. 11,000
American Trading Co. 2,000
Harburger & Stack 1,700 14,700

APRIL 7.—By the *Allemania*=Cartagena:
A. Held 1,200
Pottberg, Ebeling & Co. 500 1,700

APRIL 7.—By the *Antilla*=Mexico:
R. G. Barthold & Co. 1,200

APRIL 8.—By the *Asiatic Prince*=Bahia:
Adolph Hirsch & Co. 85,000

APRIL 10.—By the *Santa Marta*=Colombia:
A. Held 2,000

APRIL 11.—By the *Saramacca*=Puerto Mexico:
R. G. Barthold & Co. 500

APRIL 11.—By the *Monterey*=Mexico:
D. Feinburg & Co. 1,000
Lawrence Johnson & Co. 2,000
A. Gonzalez 500 3,500

APRIL 15.—By the *Prins Eitel Friedrich*=Colon:
A. M. Capen's Sons 4,000
G. Amsinck & Co. 400
Isaac Brandon & Bros. 600 5,000

APRIL 18.—By the *Morro Castle*=Mexico:
G. Amsinck & Co. 2,000
E. Steiger & Co. 20,000
Harburger & Stack 10,000 32,000

APRIL 18.—By the *Metapan*=Cartagena:
R. del Castillo 2,000
A. Held 2,000 4,000

APRIL 20.—By the *Panama*=Colon:
G. Amsinck & Co. 3,200
Wessels, Kulenkampff & Co. 700
Mecke & Co. 900
Pablo Calvet & Co. 1,000
C. Griffin 500
F. W. Dunbar 400 6,700

APRIL 20.—By the *Albingia*=Colombia:
Caballero & Blanco 2,500

APRIL 22.—By the *Oruba*=Colon:
A. Held 2,000

EAST INDIAN.

[*Denotes plantation rubber.]

POUNDS.

MARCH 21.—By the *President Grant*=Hamburg:
Rubber & Guayule Agency, Inc. *1,000

MARCH 24.—By the *Rochambeau*=Havre:
Michelin Tire Co. *22,500

MARCH 24.—By the *Lapland*=Antwerp:
Meyer & Brown *290,000

MARCH 25.—By the *Shirley*=Singapore:
Ed. Maurer *21,500
W. R. Grace & Co. *9,000
Johnstone, Whitworth & Co. *9,000
L. Littlejohn & Co. *6,000
Goodyear Tire & Rubber Co. *50,000
Various *75,000 *170,500

MARCH 25.—By the *Olympic*=Southampton:
Meyer & Brown *40,000
W. R. Grace & Co. *115,000
Rubber & Guayule Agency, Inc. . *11,200
Johnstone, Whitworth & Co. *115,000
Henderson & Korn *87,000
Arnold & Zeiss *235,000 *603,200

MARCH 25.—By the *New Amsterdam*=Amsterdam:
Meyer & Brown *38,000
Arnold & Zeiss *96,000
Rubber Trading Co. *19,000
Robinson & Co. *2,000
Various *13,000 *168,000

MARCH 25.—By the *Hamburg*=Hamburg:
Meyer & Brown *42,000
L. Littlejohn & Co. *20,000
Ed. Maurer *2,200
Henderson & Korn *45,000
Various *17,500 *126,700

MARCH 26.—By the *Orteric*=Colombo:
W. R. Grace & Co. *15,000
Robinson & Co. *11,200
Adolph Hirsch & Co. *9,500
W. Stiles *4,500
Ed. Maurer *5,600 *45,800

MARCH 26.—By the *Uhenfels*=Colombo:
Meyer & Brown *16,000
Rubber & Guayule Agency, Inc. . *6,000
Ed. Maurer *12,500 *34,500

MARCH 27.—By the *Missouri*=Southampton:
Meyer & Brown *10,000
Adolph Hirsch & Co. *25,000
Robinson & Co. *20,000
Ed. Maurer *20,000
Western Electric Co. *25,000
Rubber & Guayule Agency, Inc. . *36,000
Rubber Trading Co. *11,200
Charles T. Wilson *55,000
General Rubber Co. *135,000
Johnstone, Whitworth & Co. *75,000
Henderson & Korn *90,000
W. Stiles *3,000
Ed. Boustead & Co. *8,000
Various *60,000 *573,200

MARCH 30.—By the *Pennsylvania*=Hamburg:
Meyer & Brown *16,000
Henderson & Korn *11,200
Rubber & Guayule Agency, Inc. . *6,000 *33,200

MARCH 30.—By the *Philadelphia*=Southampton:
Meyer & Brown *65,000
Ed. Maurer *90,000
Earle Bros. *13,500
Rubber & Guayule Agency, Inc. . *60,000
Henderson & Korn *135,000
Arnold & Zeiss *130,000
Various *72,000 *565,500

APRIL 1.—By the *Vaderland*=Antwerp:
Meyer & Brown *260,000
Arnold & Zeiss *30,000
Rubber Trading Co. *2,200 *292,200

APRIL 1.—By the *Noordam*=Amsterdam:
Meyer & Brown *22,500
Rubber Trading Co. *5,000
Henderson & Korn *2,200
Various *17,000 *46,700

APRIL 1.—By the *Minnetonka*=London:
Meyer & Brown *31,000
Ed. Maurer *13,500
Henderson & Korn *120,000
L. H. Rossbach, Bros. & Co. *9,000
Ed. Boustead & Co. *15,000
Johnstone, Whitworth & Co. *235,000
Charles T. Wilson *210,000
General Rubber Co. *290,000
Goodyear Tire & Rubber Co. *30,000
Various *37,000 *990,500

APRIL 3.—By the *City of Corinth*=Colombo:
Meyer & Brown *67,000
Rubber & Guayule Agency, Inc. . *11,200
Adolph Hirsch & Co. *3,000
W. Stiles *5,000
Robinson & Co. *19,000
W. R. Grace & Co. *67,000
Arnold & Zeiss *60,000
Henderson & Korn *40,000 *272,200

APRIL 3.—By the *St. Louis*=Southampton:
Earle Bros. *7,000
Robinson & Co. *37,500
Arnold & Zeiss *28,000
Ed. Maurer *3,500
Various *252,000 *328,000

APRIL 4.—By the *President Lincoln*=Hamburg:
Meyer & Brown *47,000
Ed. Maurer *7,000
Henderson & Korn *13,500
Rubber & Guayule Agency, Inc. . *4,000 *71,500

APRIL 6.—By the *Kaiserin Auguste Victoria*=Hamburg:
Meyer & Brown *11,200
Johnstone, Whitworth & Co. *2,500
Rubber & Guayule Agency, Inc. . *3,000 *16,700

APRIL 6.—By the *Molthe*=Hamburg:
Various *15,000

APRIL 8.—By the *Minnewaska*=London:
Meyer & Brown *4,500
Robinson & Co. *9,000
Earle Bros. *2,500
W. R. Grace & Co. *36,500
Henderson & Korn *90,000
Adolph Hirsch & Co. *22,500
Charles T. Wilson *80,000
Arnold & Zeiss *33,500
Johnstone, Whitworth & Co. *200,000
United Malaysian Rubber Co. *2,000
W. Stiles *1,000

Rubber & Guayule Agency, Inc..	*11,200	
Rubber Trading Co.	*4,500	
Raw Products Co.	*5,600	
Henderson & Korn.	*103,000	
Various	*115,000	*720,800
APRIL 9.—By the *Kroonland*=Antwerp:		
Meyer & Brown.	*300,000	
Arnold & Zeiss.	*17,500	
Rubber & Guayule Agency, Inc..	*2,200	
Various	*20,000	*339,700
APRIL 9.—By the *Ryndam*=Amsterdam:		
Meyer & Brown.	*8,500	
Various	*10,000	*18,500
APRIL 9.—By the *Oceanic*=Southampton:		
Meyer & Brown.	*9,000	
W. Stiles	*3,000	
Ed. Maurer	*15,000	
W. R. Grace & Co.	*3,500	
Johnstone, Whitworth & Co....	*33,500	
Arnold & Zeiss.	*200,000	
Charles T. Wilson.	*10,000	
Henderson & Korn.	*238,500	
Goodyear Tire & Rubber Co....	*125,000	*637,500
APRIL 11.—By the *Cestrian*=Liverpool:		
Henderson & Korn.		*40,000
APRIL 11.—By the *Noorderdyk*=Amsterdam:		
Meyer & Brown		*7,000
APRIL 13.—By the *St. Paul*=Southampton:		
Arnold & Zeiss.	*42,000	
Rubber Trading Co.	*20,000	
Charles T. Wilson.	*28,000	
Ed. Maurer	*9,500	
Various	*237,000	*336,500
APRIL 13.—By the *Rappenfels*=Colombo:		
Meyer & Brown.	*73,500	
W. Stiles	*17,000	
Arnold & Zeiss.	*60,000	
W. R. Grace & Co.	*35,000	
Henderson & Korn.	*45,000	
Robinson & Co.	*9,000	
Ed. Maurer	*6,000	
Various	*111,500	*357,000
APRIL 13.—By the *Egremont Castle*=Singapore:		
Meyer & Brown.	*9,000	
Arnold & Zeiss.	*86,000	
Henderson & Korn.	*55,000	
Ed. Maurer	*40,000	
Ed. Boustead & Co.	*2,500	
Various	*307,500	*500,000
APRIL 14.—By the *Louisiane*=Havre:		
Various		*7,000
APRIL 14.—By the *Rotterdam*=Amsterdam:		
Meyer & Brown.	*22,000	
Various	*10,000	*32,000
APRIL 15.—By the *Finland*=Antwerp:		
Meyer & Brown.	*120,500	
Arnold & Zeiss.	*85,000	
General Rubber Co.	*20,000	
Rubber & Guayule Agency, Inc..	*16,000	
Various	*40,000	*281,500
APRIL 15.—By the *Erroll*=Singapore:		
Meyer & Brown.	*9,000	
Arnold & Zeiss.	*125,000	
Ed. Maurer	*50,000	
Henderson & Korn.	*95,000	
Ed. Boustead & Co.	*11,200	
Hadden & Co.	*2,200	
Robinson & Co.	*3,500	
Various	*140,000	*435,900
APRIL 16.—By the *Niagara*=Havre:		
Michelin Tire Co.		*50,000
APRIL 16.—By the *Olympic*=Southampton:		
The B. F. Goodrich Co.	*192,000	
Goodyear Tire & Rubber Co....	*37,000	
Robinson & Co.	*22,500	
W. R. Grace & Co.	*8,000	
Rubber Trading Co.	*25,000	*284,500
APRIL 18.—By the *Kandahar*=Colombo:		
Meyer & Brown.	*55,000	
H. W. Peabody & Co.	*4,000	
Arnold & Zeiss.	*22,500	
W. R. Grace & Co.	*35,000	
Robinson & Co.	*20,000	
W. Stiles	*25,000	
Henderson & Korn.	*30,000	
Various	*10,000	*201,500
APRIL 20.—By the *New York*=Southampton:		
Arnold & Zeiss.	*72,000	
Ed. Maurer	*17,000	
Robinson & Co.	*3,500	*92,500
APRIL 20.—By the *Lapland*=Antwerp:		
Meyer & Brown.	*185,000	
Arnold & Zeiss.	*80,000	*265,000
APRIL 20.—By the *Amerika*=Hamburg:		
Henderson & Korn.	*14,000	
Ed. Maurer	*2,000	
Rubber & Guayule Agency, Inc.	*10,000	*26,000
APRIL 20.—By the *Graf Waldersee*=Hamburg:		
Charles T. Wilson.	*2,200	
Rubber & Guayule Agency, Inc.	*7,000	
Ed. Maurer	*16,000	
Henderson & Korn.	*30,000	
Arnold & Zeiss.	*11,200	
Various	*30,000	*96,400
APRIL 20.—By the *Indraghiri*=Singapore:		
The B. F. Goodrich Co.	*130,000	
Henderson & Korn.	*35,000	
Ed Maurer	*20,000	
Various	*65,000	*250,000
APRIL 22.—By the *Mesaba*=London:		
Henderson & Korn.	*215,000	
General Rubber Co.	*95,000	
Johnstone, Whitworth & Co....	*38,000	
Charles T. Wilson.	*33,500	
Various	*25,000	*406,500
APRIL 23.—By the *Westerdyk*=Amsterdam:		
Robinson & Co.		*8,000
APRIL 23.—By the *Potsdam*=Amsterdam:		
Rubber Trading Co.	*32,000	
Various	*22,500	*54,500
APRIL 23.—By the *Philadelphia*=Southampton:		
Meyer & Brown.	*16,000	
W. Stiles	*11,200	
Robert Badenhop	*11,200	
Charles T. Wilson.	*12,500	
Arnold & Zeiss.	*20,000	
Earle Bros.	*3,000	
Rubber Trading Co.	*3,500	
Henderson & Korn.	*20,000	*97,400

AFRICAN.

	Pounds.	
MARCH 21.—By the *President Grant*=Hamburg:		
Various	2,200	
MARCH 23.—By the *Cedric*=Liverpool:		
Henderson & Korn.	11,200	
Earle Bros.	2,000	
Various	11,200	24,400
MARCH 23.—By the *Carmania*=Liverpool:		
Arnold & Zeiss.	33,500	
Johnstone, Whitworth & Co....	5,000	
Henderson & Korn.	5,000	
W. Stiles	2,200	
Various	5,000	50,700
MARCH 30.—By the *Pennsylvania*=Hamburg:		
Meyer & Brown.	33,500	
Henderson & Korn.	35,000	
Ed. Maurer	33,500	
Arnold & Zeiss.	50,000	
Rubber & Guayule Agency, Inc..	10,000	
Various	20,000	182,000
APRIL 4.—By the *President Lincoln*=Hamburg:		
Rubber & Guayule Agency, Inc...	30,000	
Various	32,500	62,500
APRIL 6.—By the *Kaiserin Auguste Victoria*=Hamburg:		
Arnold & Zeiss.	35,000	
Ed. Maurer	2,200	
Rubber & Guayule Agency, Inc..	5,200	
Various	20,000	62,400
APRIL 6.—By the *Baltic*=Liverpool:		
Meyer & Brown.	11,200	
Arnold & Zeiss.	9,000	
W. R. Grace & Co.	5,000	
Johnstone, Whitworth & Co....	2,200	27,400
APRIL 8.—By the *Minnewaska*=London:		
Arnold & Zeiss.	17,000	
Various	22,500	39,500
APRIL 9.—By the *Kroonland*=Antwerp:		
Arnold & Zeiss.	27,000	
Various	40,000	67,000
APRIL 11.—By the *Chicago*=Havre:		
Arnold & Zeiss.		13,500
APRIL 11.—By the *Cestrian*=Liverpool:		
General Rubber Co.	25,000	
Earle Bros.	2,200	
Various	45,000	72,200
APRIL 13.—By the *St. Paul*=Southampton:		
Meyer & Brown.	6,000	
Various	28,000	34,000
APRIL 14.—By the *Louisiane*=Havre:		
Meyer & Brown.		47,000
APRIL 15.—By the *Finland*=Antwerp:		
General Rubber Co.	8,500	
Rubber & Guayule Agency, Inc..	4,500	
Various	32,000	45,000
APRIL 16.—By the *Niagara*=Havre:		
Various		60,000
APRIL 17.—By the *Canadian*=Liverpool:		
Johnstone, Whitworth & Co....	22,000	
Arnold & Zeiss.	6,000	
Various	40,000	68,000
APRIL 18.—By the *Rochambeau*=Havre:		
Johnstone, Whitworth & Co....	40,000	
De Lagotellerie	7,500	47,500
APRIL 20.—By the *New York*=Southampton:		
Various		2,500
APRIL 20—By the *Graf Waldersee*=Hamburg:		
Ed. Maurer	6,000	
Various	30,000	36,000
APRIL 23.—By the *Philadelphia*=Southampton:		
Arnold & Zeiss.		85,000
APRIL 20.—By the *Lapland*=Antwerp:		
Arnold & Zeiss.	13,500	
Various	11,200	24,700
APRIL 20.—By the *Amerika*=Hamburg:		
Meyer & Brown.	22,000	
Henderson & Korn.	9,000	
Ed. Maurer	30,000	
Arnold & Zeiss.	25,000	86,000

CUSTOM HOUSE STATISTICS.

PORT OF NEW YORK—MARCH, 1914.

Imports:	Pounds.	Value.
India rubber	15,054,523	$7,603,473
Balata	117,417	54,726
Gutta percha	335,143	57,485
Gutta jelutong (Pontianak)..	1,968,086	85,772
Total	17,475,169	$7,801,456
Exports.		
India rubber	53,468	$29,624
Balata	32,081	16,856
Reclaimed rubber	87,481	13,305
Rubber scrap, imported.....	1,333,815	$116,910
Rubber scrap, exported	364,331	44,002

BOSTON ARRIVALS.

IMPORTS IN MARCH, 1914.

	Pounds.	Value.
Gutta jelutong	752,366	$35,792
Gutta percha	79,466	10,533
India rubber	225,492	108,858

EXPORTS OF INDIA RUBBER AND CAUCHO FROM PARA, MANAOS AND IQUITOS DURING FEBRUARY, 1914 (IN KILOGRAMS).

EXPORTERS.	NEW YORK. Fine.	Medium.	Coarse.	Caucho.	Total.	EUROPE. Fine.	Medium.	Coarse.	Caucho.	Total.	Grand Total.
Zarges, Berringer & Co.	235,689	82,136	144,489	99,555	561,869	464,402	48,516	45,234	123,196	681,348	1,243,217
General Rubber Co. of Brazil.	17,495	2,336	37,958	41,785	99,574	143,402	22,029	11,636	51,939	229,006	328,580
J. Marques	70,560	39,188	129,926	73,090	312,764	183,648	1,020	.....	93,940	278,608	591,372
Seligman & Co.	.....	.....	2,924	23,370	26,294	18,340	.....	2,036	8,143	28,518	54,812
Suarez Hermanos & Co., Ltd.	26,855	3,205	3,624	.....	33,684	218,917	.....	6,093	199,649	424,659	458,343
De Lagotellerie & Co.	6,859	.....	.....	.....	6,859	5,780	.....	.....	.....	5,780	12,639
Pires Teixeira & Co.	23,460	5,100	69,610	280	98,450	38,420	.....	.....	.....	38,420	136,870
Sundry exporters	22,900	4,970	9,020	6,560	43,450	39,947	6,689	6,246	14,292	67,174	110,624
Itacoatiara, direct	.....	.....	.....	.....	.....	11,400	1,510	9,110	6,300	28,320	28,320
	403,818	136,935	397,551	244,640	1,182,944	1,124,256	79,764	80,354	497,459	1,781,833	2,964,777
Manáos, direct	173,899	47,040	91,821	122,907	435,667	571,378	69,743	90,726	333,226	1,065,073	1,500,740
Iquitos, direct	42,816	4,091	15,150	167,468	229,525	65,876	4,401	24,309	54,813	149,399	378,924
Total, February, 1914.	620,533	188,066	504,522	535,015	1,848,136	1,761,510	153,908	195,389	885,498	2,996,305	4,844,441
Total, January, 1914.	914,867	202,392	692,568	238,354	2,048,181	1,094,577	146,610	167,156	291,274	1,699,617	3,747,798

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EXPORTS OF CEYLON GROWN RUBBER.

[From January 1 to March 16, 1913 and 1914. Compiled by the Ceylon Chamber of Commerce.]

	1913.	1914.
To Great Britain.....*pounds*	2,436,562	3,832,503
To United States.....	1,840,795	1,390,780
To Belgium	457,506	1,432,240
To Australia	74,871	20,160
To Japan	50,978	96,803
To Germany.....	23,479	352,128
To Italy.....	22,460	.....
To Austria.....	20,419	.....
To Holland.....	500	.....
To Russia.....	.....	98,482
To France.....	.....	58,096
To Straits Settlements.....	.....	35,815
To India.....	.....	500
Total	4,927,570	7,317,507

(Same period, 1912—2,812,384; same period, 1911—1,105,293 pounds.)

The export figures of rubber given in the above table include the imports re-exported. (These amount to 505,361 pounds—376,392 pounds from the Straits and 128,969 pounds from India.) To arrive at the approximate quantity of Ceylon rubber exported to date, deduct the quantity of imports shown in the import table from the total exports.

[From January 1 to December 31, 1912 and 1913. Compiled by the Ceylon Chamber of Commerce.]

	1912.	1913.
To Great Britain.....*pounds*	8,176,523	15,841,126
To United States.....	4,833,085	6,417,236
To Belgium.....	1,315,298	4,214,736
To Australia.....	250,326	462,473
To Germany.....	210,021	417,946
To Austria.....	85,782	31,434
To Japan.....	81,456	312,868
To Canada.....	22,078	.....
To France.....	11,568	32,958
To Italy.....	7,744	44,784
To Russia.....	4,173	101,116
To Holland.....	2,282	992
To India.....	700	1,881
To Norway and Sweden.....	39	.....
To Straits Settlements.....	.....	153,795
Total	15,001,075	28,033,345

The export figures of rubber for 1913 given in the above table include the imports re-exported. To arrive at the approximate quantity of Ceylon rubber exported for 1913 to date deduct the quantity of imports shown in the import table from the total exports. In previous years the exports of Ceylon rubber only were given.

TOTAL EXPORTS FROM MALAYA.

(From January 1 to dates named. Reported by Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.)

To—	Singapore. March 11.	Malacca. Feb. 28.	Penang. Feb. 28.	Port Swettenham. March 15.	Total.
Great Britain...*pounds*	4,383,308	886,290	3,243,867	5,309,005	13,822,470
Continent	335,992	.....	116,400	689,046	1,141,438
Japan	194,844	.....	.....	.....	194,844
Ceylon	71,027	.....	174,000	363,594	608,621
United States	2,149,661	.....	182,933	.....	2,332,594
Australia	10,741	.....	.....	.....	10,741
Total, 1914.....	7,145,573	886,290	3,717,200	6,361,645	18,110,708
Total, 1913.....	4,806,621	.....	2,110,666	6,520,463	13,437,750
Total, 1912.....	2,161,478	.....	847,722	4,687,124	7,696,324
Total, 1911.....	1,266,855	.....	330,267	2,479,933	4,077,055

LOCK THE TIRES OR WATCH THEM.

It is apparently a dangerous thing to leave tires unwatched on Broadway, New York. A few nights ago an automobile dealer left his car unattended for a few minutes on upper Broadway to run into his office. When he returned to the car he found that two spare tires had disappeared. This occurred in one of the lightest spots along that well lighted thoroughfare and within easy observation of several traffic policemen. When the owner of the car entered his complaint with the nearest police officer, who was standing not far away, he was told, by way of consolation, that he had no business to leave his car. It is a good idea, in most large cities, to have spare tires chained to the car or else duly watched.